

Prevalence of Low Back Pain Among Employees of Eastern Visayas Regional Medical Center (EVRMC) Tacloban City, Leyte*

Ma. Daphne Rachele R. Delgado, MD and Mae Christine Agatha Bodo-Bernabe, MD, FPAFP

Introduction: Occupational low back pain has been prevalent in many work places everywhere. The authors have encountered employees from all sorts of job coming in for a health consultation relative to low back pain, including those who work at Eastern Visayas Regional Medical Center (EVRMC).

Objectives: This study aimed to assess the prevalence of low back pain among the employees of Eastern Visayas Regional Medical Center (EVRMC). The study specifically aimed to determine the profile of the employees, their low back pain experience, and the physical, psychological, and ergonomic factors which may be contributing to low back pain.

Methods: This was a cross-sectional study among employees of EVRMC. A questionnaire was distributed to 1002 employees, from which 914 was returned, yielding a return rate of 91%. Eight hundred six (806) respondents were considered for the study after excluding those who were pregnant and had history of trauma, and those whose questionnaires had missing data. Under an alpha level of 0.05, associations between the employees' profile and LBP were determined.

Results: Findings revealed that one hundred sixty seven out of the eight hundred six respondents (20.71%) had low back pain. One hundred forty-seven (147) of them had moderate disability. Majority of the respondents were young adults, aged 25-45 years old. Males and Females were affected equally. The most number of employees who were able to participate in the study were from the administrative (n=288) and the nursing (n=262) divisions. Twenty-one percent (21%) of the respondents had low back pain at the time of data gathering, and 51.49 % of them had ergonomic factors mostly causing their back pain.

Conclusion: The most common factor causing low back pain among the employees was ergonomic in nature and it had something to do with poor body mechanics. Awareness raising and giving of inputs through seminars and distribution of educational materials and pamphlets on proper body mechanics was put forth as recommendation from the findings of the study.

Keywords: low back pain, ergonomic factors, occupational, employee

* From the Department of Family and Community Medicine, Eastern Visayas Regional Medical Center, Tacloban City, Leyte

INTRODUCTION

Low back pain (LBP) has been reported as the most frequent cause of disability for individuals less than 45 years old and the third leading cause of disability for those more than 45 years old. This problem has a substantial impact on individuals and their families, communities, health-care systems and businesses. This includes pain, activity limitations, participation restrictions, career burden, high utilization of health-care resources and financial burden.

Worldwide, 37% of LBP are attributed to occupation. Occupational exposures to ergonomic stressors represent a substantial source of preventable back pain. Job dissatisfaction, monotonous tasks, poor work relations, lack of social support in the workplace, demands, stress and perceived ability were associated with an increased occurrence of low back pain. Job dissatisfaction has also been shown to be associated with transition from acute to chronic low back pain.¹

The researcher has encountered employees from all sorts of job coming in for a health consultation in relation to low back pain, including those who work at Eastern Visayas Regional Medical Center (EVRMC). This hospital is the largest government hospital in Region VIII. It is a 450-bed, level 3 hospital located in Tacloban City, Leyte. It provides integrated and comprehensive multi-specialty health care services for the people of Samar and Leyte, whose population is at 4.5 million. The workload of the hospital workers here can be enormous and overwhelming.

On this light, the researcher embarked on this study to be able to primarily determine the number of cases complaining of work-related low back pain and the factors that trigger the pain. Results of this study may be able to influence the employers and coordinators of EVRMC to help reduce or modify the ergonomic factors at work that mostly causes low back pain among the employees.

Objectives

This study aimed to determine the prevalence of low back pain and disability among the employees

of Eastern Visayas Regional Medical Center, Tacloban City.

Specifically, this study aimed to:

1. Identify the profile of the employees as to age, sex, area of assignment and Body Mass Index (BMI).
2. Determine the prevalence of low back pain among EVRMC employees.
3. Determine the physical, psychological and ergonomic factors which contribute to low back pain among the respondents.
4. Determine the number of employees who are at risk to have low back disability.

METHODS

Study Design

This study is a descriptive survey involving all the EVRMC employees who were eligible to become part of the study. The profile of the respondents as to age, sex, weight, height, and body mass index and area of work was determined alongside with the prevalence of low back pain as an occupational problem with its severity as low back disability scores were gathered. The researcher likewise described the number of documented or reported cases of low back pain among the EVRMC employees.

Subjects and Setting

The study involved a complete enumeration of the 1002 employees in the various work areas of Eastern Visayas Regional Medical Center. Excluded in the study were pregnant women employees and those who had a history of trauma to the back.

Nine hundred fourteen (914) completed questionnaires were returned, yielding a return rate of 91%. Eight hundred six (806) respondents were considered for the study after

excluding those who were pregnant (10) and had history of trauma (20), and those whose questionnaires had missing data (78). Of the 806 respondents, 167 disclosed presence of acute low back pain at the time of data gathering.

Two hundred eighty-eight (288) of the 806 were from the Administrative Division, 134 were from the Allied Services, 122 were from the Medical Division and 262 were from the Nursing Division.

This study was conducted at Eastern Visayas Regional Medical Center, Tacloban City, Leyte. The research was conducted within 1 year.

Data Collection Tool

The study employed the use of a four-part questionnaire. The first part of the questionnaire is designed to collect the demographic data of the respondents as to age, sex, weight, height (will be used for the computation of the BMI) and area of assignment. The second part of the questionnaire asked about the prevalence of low back pain among the respondents, the duration of the pain and its recurrence. This part is an Acute Low Back Pain Survey Questionnaire by Linton and Halden (1996). The third part of the questionnaire was the tool that extracted data as to the physical, psychosocial and ergonomic factors in the workplace present in the respondents' life. This is based on the study of Feuerstein and his colleagues (2001) on Working with Low Back Pain: Workplace and Individual Psychosocial Determinants of Limited Duty and Lost Time were included. The respondents were asked to note how often the factors present in their life, with the use of a four-point Likert Scale where 4 means always and 1, never. Statements 1-3 pertain to the physical factors of the respondents, 4-10 for psychosocial factors and 11-19 for ergonomic factors in the workplace that predispose the respondent to develop low back pain.

The fourth part of the questionnaire were only filled up by those who had disclosed a current history of low back pain. This questionnaire is the standardized Revised Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire). This test is

considered the gold standard of low back functional outcome tools.

Outcome Measurement

The acute low back pain screening questionnaire were scored according to the suggested scoring methods by the author. Each question was scored differently, as follows:

1. For question 4, the number of pain sites were counted and multiplied by 2
2. For questions 6, 7, 8, 9, 10, 12, 13, 14, 17, 18 and 19, the score was the number that has been ticked or circled.
3. For questions 11, 15, 16, 20, 21, 22, 23 and 24 the score was 10 minus the number that has been ticked or circled.
4. Sum of all the scores were then computed.

If the computed sum is 105 or more, the respondent is at risk for developing more persistent problems in the future. When the respondent is at risk, he is prompted to answer the next questionnaire in which the mean score of the physical, psychological and ergonomic factors was computed through item analysis. The answers pertaining to the extent to which the factors were present were aggregated by computing the mean. The obtained mean scores were interpreted as being present to a certain extent, as being present to a high extent if the obtained mean score was more than the median score of 2.50 and present in a low extent if the obtained mean score was below 2.49

The disability questionnaire was scored on a vertical scale of 0-5. The total scores were added up and was multiplied by 2. The sum was divided by the total number of sections answered by the respondent. The quotient was then finally multiplied by then which resulted to a percentage. A score of 22% or more was considered significant activities of daily living disability. Specifically, the answers were categorized as follows:

The obtained scores were interpreted as follows:

0-20% minimal disability	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting, sitting and exercise.
21-40% moderate disability	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
41-60% severe disability	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
61-80% crippled	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
81-100%	These patients are either bed-bound or exaggerating their symptoms.

Analysis

The research question on the profile (age, sex, BMI and area of assignment), history of low back pain and disability scores (minimal disability to crippled) were presented in frequency and percentage distribution tables. Mean scores for age and BMI were likewise computed. Data pertaining to the contributing factors were subjected to an item analysis for the 4-point Likert scale. Mean scores were then determined and were ranked from the largest to the smallest mean score.

This then reflected the factors that was present to a high extent and a low extent among the employees. The most common factors were also reflected using other measures of central tendency like the mean.

RESULTS

The Eastern Visayas Regional Medical Center (EVRMC) has 1002 employees during the study period. Eight hundred

six of them were considered as respondents to this study. Table 1 (last column) shows that 167 out of 806 (20.71%) employees experienced low back pain at the time of data gathering. Six hundred seventy of the respondents belong to the young adult age group (<45 years old) and 55.09% of them were female.

Only 36.10% of the respondents had a healthy body mass index (BMI) while 14.64% were underweight and 18.86% and 15.39% were obese I and obese II, respectively. Two hundred eighty-eight (35.73%) of the respondents came from the administrative division while 32.51% were nurses, 16.63% came from the allied services and 15.13% were doctors.

Table 1 also shows that of the 167 respondents, LBP was more prevalent among those who were less than 45 years old (78.44%) and among females (51.49%). Low back pain was also more prevalent among those with a healthy BMI (40.12%) and among those working at the administrative division (35.33%).

Table 2 reveals the possible factors causing low back pain among the employees. Ergonomic factors were identified to be present to a high extent among the respondents. Four items under ergonomic exposure was rated to be present to a high extent by a majority of the respondents. Ergonomic factors included in the study are lifting heavy materials, work that requires one to kneel or squat, or seated most of the time, also repeated bending of the back, carrying items with one hand and lifting stuff quickly even if body is twisted. Most of the items answered pertained to a low application of the principles of body mechanics.

Table 3 shows that 147 out of the 167 with LBP at the time of data gathering had moderate disability. Of the 147, there were 32 who scored high on developing a more persistent disability in the future.

DISCUSSION

The study revealed that 167 out of the 806 respondents (20.71%) had low back pain. The problem was more

Table 1. Socio-demographic profile and anthropometric measurement of employees at EVRMC with low back pain (January 2017- December 2017)

	With LBP n=167, 20.71%		Without LBP n=639, 79.29%		Grand Total	
<i>Age in Years</i>	f	%	F	%	f	%
<45 years old	131	78.44	539	84.35	670	83.12
45-54 old	31	18.56	91	14.24	122	15.13
>55 years old	5	3.00	9	1.41	14	1.75
Total	167	100.00	639	100.00	806	100.00
<i>Gender</i>						
Male	81	48.51	281	77.63	362	44.91
Female	86	51.49	358	80.64	444	55.09
Total	167	100.00	639	79.3	806	100.00
<i>BMI</i>						
Underweight	27	16.16	91	14.24	118	14.64
Healthy	67	40.12	224	35.05	291	36.10
At risk	29	17.37	92	14.40	121	15.01
Obese 1	23	13.77	129	20.19	152	18.86
Obese 2	21	12.58	103	16.12	124	15.39
Total	167	100.00	639	100.00	806	100.00
<i>Area of Work</i>						
Administrative	59	35.33	229	35.84	288	35.73
Allied	33	19.76	101	15.81	134	16.63
Medical	39	23.35	83	12.98	122	15.13
Nursing	36	21.56	226	35.37	262	32.51
Total	167	100.00	639	100.00	806	100.00

Table 2. Factors that contribute to low back pain among EVRMC employees (January 2017 – December 2017).

	High Extent		Low Extent	
	N	%	n	%
<i>Physical Factors</i>				
1 Not getting enough exercise	440	54.6	366	45.4
2 Cigarette smoking	113	14.0	693	86.0
3 Not feeling good about health status	186	23.1	620	76.9
<i>Psychological Factors</i>				
4 Being bothered by feelings of depression in the past week	271	33.6	535	66.4
5 Feeling tense or anxious in the past week	314	39.0	492	61.0
6 Having worries interfere with your daily life	331	41.1	475	58.9
7 Feeling that work situation is putting the respondent under too much stress	354	43.9	452	56.1
8 Not having enough people available for support in bad moments or in illness	272	33.7	534	66.3
9 Not being satisfied with job in terms of work routines, management, salary, promotion possibilities and workmates	128	15.9	678	84.1
10 Feeling that job is heavy or monotonous	434	53.8	372	46.2

	High Extent		Low Extent	
<i>Ergonomic Factors</i>				
11 Lifting materials that weigh more than 25 pounds	369	45.8	437	54.2
12 Lifting or handling bulky items	330	40.9	476	59.1
13 Work requiring that employee kneel or squat	240	29.8	566	70.2
14 Repeatedly bending back (e.g., forward, backward, to the side or twist) in the course of work	401	49.8	405	50.2
15 Twisting body whenever lifting something	333	41.3	473	58.7
16 Lifting and/or carrying items with one hand	440	54.6	366	45.4
17 Lifting or moving components at work require that the hands are lower than the knees.	412	51.1	394	48.9
18 Continually leaning forward when working	476	59.1	330	40.9
19 Work requires that employee is seated	508	63.0	298	37.0

Table 3. Prevalence of low back pain among EVRMC employees from January 2017- December 2017(n = 806).

	Frequency	Percent
With current low back pain	167	20.71 (n=806)
Disability Score for Employees with Current		
LBP		
Minimal disability	20	11.97 (n= 167)
Moderate disability	147	88.2 (n=167)
Total	167	
Employees at risk for developing disability from lower back pain (LBP)	32	19.16 (n=167)

prevalent among the younger age group, among females, and those with a BMI within the normal limits. The findings of the present study is similar to a study investigating the prevalence and factors associated with low back pain among adults in Taiwan (Chou et al) found that among the 24,435 adults, 25.7% had reported low back pain within the past 3 months. One of the factors associated with low back pain included female gender (odds ratio (OR) = 1.67, 95% confidence interval (CI) = 1.43-1.95).⁷

Veras dos Santos, et al. posit that certain causes of lower back pain have a tendency to occur more often in younger individuals versus older adults: Younger adults (30 to 60 year old) are more likely to experience

back pain from the disc space itself (e.g. lumbar disc herniation or degenerative disc disease) or from a back muscle strain.⁶

Findings from the study likewise reflect that there were more respondents who had ideal body mass index who experience LBP. It was once assumed that extra body weight would stress the low back and lead to pain, however, researchers have reported inconsistencies association between body weight and back pain.¹³ Several studies have, however, clearly shown that people with high BMI are more prone to LBP. A meta- analysis including 33 studies showed that obesity was associated with increased prevalence of LBP in the past 12 months.¹⁴

The most common factor proven to be associated with low back pain as identified by the respondents is an ergonomic. Occupational exposures to ergonomic represent a substantial source of preventable back pain. Job dissatisfaction, monotonous tasks, poor work relations, lack of social support in the workplace, demands, stress and perceived ability were associated with an increased occurrence of low back pain. Job dissatisfaction has also been shown to be associated with transition from acute to chronic low back pain.¹

CONCLUSION AND RECOMMENDATION

The prevalence of low back pain among the employees of Eastern Visayas Regional Medical Center is at 20.71% with 18.23% of the respondents manifesting signs of moderate disability. Ergonomic factors, mostly pertaining to poor body mechanics on lifting, bending and twisting, was the one factor identified by the respondents to be present to a high extent. Low back pain has been found to be prevalent among those who belong to the younger age group (<45 years old), among females and those who have normal BMI and mostly from the Administrative Division (35.33%).

It is highly recommended that interactive seminars be conducted on the Principles of Body Mechanics. Educational materials on the principles and application of the proper body mechanics at work may also be distributed. Employees who had LBP must be checked and examined thoroughly by the Occupational Safety and Health Officer (OSH) in Industrial and Employee Clinic for evaluation and treatment or for proper referral to the Rehabilitation Medicine to prevent further injury and disability.

REFERENCES

1. Punnett L, Ustün AP, Nelson DI, Fingerhut MA, Leigh J, Tak S, Phillips S. Estimating the global burden of low back pain attributable to combined occupational exposures. *Am J Ind Med* 2013.
2. University of Queensland, School of Population Health, Herston Rd, Herston, QLD 4006, Australia. d.hoy@uq.edu.au
3. Waddell G, Burton AK. Occupational health guidelines for the management of low back pain at work: Evidence review. *Occup Med* 2001; 51 (2): 124-35. Oxford University Press. Great Britain
4. National Institute of Neurological Disorders. (2014 December). Back Pain Fact Sheet. NINDS Publication No 15 (5161).
5. Helfenstein Jr. M, Goldenfum MA & Siena C. Occupational low back pain. *Revista da Associação Médica Brasileira* 2010; 56 (5): 583-9.
6. Veras dos Santos J, Gomes Júnior VF, Souza AS, Farias NS, Marques SS, da Costa JM. Socio-demographic and physical- functional profile of low back pain patients 2015.
7. Chou YC, Shih CC, Lin JG, Chen TL, Liao CC. Low back pain is prevalent among Taiwanese adults and is associated with osteoporosis. *J Rehab Med* 2013; 45 (1): 76-80. DOI: 10.2340/16501977-1070
8. Shiri R, Karppinen J, Leino-Arjas P, Solovieva S, Viikari-Juntura E. The association between smoking and low back pain: a meta-analysis. *Am J Med* 2009; 123(1): 87. e7-35. doi: 10.1016/j.amjmed.2009.05.028.
9. Thompson D Jr. Chronic pain and smoking. *Everyday Health Media, LLC.* 2016
10. Simmonds MJ, Kumar S, Lechelt E. Psychological factors in disabling low back pain: causes or consequences? *Disab Rehab* 2000; 18(4): 161-8.
11. Feyer AM, Herbisona P, Williamsonb AM, de Silva I, Mandrykd J, Hendried L, Helye MCG. The role of physical and psychological factors in occupational low back pain: a prospective cohort study. *Occup Environ Med* 2000; 57 (2):116-20.
12. Deardorff, William W. (2016). Stress-Related Back Pain. *Spine*.
13. Seaman D. Chiropractic and manual therapies. *BioMed Central* 2013; 21 (15).
14. Duthy B. Low back pain. Priority medicines for Europe and the world "A Public Health Approach to Innovation" Update on 2004 Background Paper. 2013