

Economic Burden of Low Back Pain on Patients Seen at the Outpatient Physiotherapy Clinics of Secondary and Tertiary Health Institutions in Ibadan

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ABSTRACT

A limited amount of data exists on the burden of low back pain (LBP) in developing countries. This study was therefore carried out to determine the economic burden of LBP on patients seen in out-patient physiotherapy clinics of secondary and tertiary health institutions in Ibadan.

Forty (25 males, 15 females) individuals with LBP receiving physiotherapy in secondary and tertiary health institutions in Ibadan participated in this cross-sectional study. Data on the economic burden of LBP and socio-demographic information of participants were collected using a self-developed questionnaire. Participants' disability was assessed using the Rolland Morris Low Back Pain Disability Questionnaire. Data was analysed using descriptive statistics of proportions, mean and standard deviations, inferential statistics of Chi-square and an independent t-test. Level of significance was set at 0.05.

The overall estimated annual economic costs (direct cost – 114,666.25 ± 74230.53 naira; indirect cost 24,495.00 ± 16,837.13 naira) of LBP were averaged at 139,156.25 ± 77091.16 naira. The average loss of work hours per hospital visit was estimated at 10.25 ± 6.75 hours per month. There was no significant difference between the economic costs of male and female patients with LBP ($p=0.598$). There was a significant association ($p=0.04$) between economic cost of care and disability.

It was concluded that the direct cost of care accounted for majority of the money spent by patients with LBP receiving physiotherapy. Cost of care in LBP increases with disability.

Key words: *Low back pain, economic costs, health institutions, disability*

INTRODUCTION

Low back pain (LBP) is the most common musculoskeletal problem that brings patients to the hospital.¹ It is usually accompanied by painful limitation of movement, often influenced by physical activities and postures and may also be associated with referred pain.² In the United States, LBP has reached epidemic proportions and represents a significant threat to the public health of its citizens.³

The recurrence of the condition is common. The lifetime prevalence is over 70% in industrialized countries, with peak prevalence between ages 35 and 55.⁴ In Nigeria, the prevalence of LBP among hospital workers was reported to be 46%, with the highest prevalence (69%) recorded amongst nursing staff, followed by secretaries/administrative staff (55%) and cleaners/aids (47%). Heavy physical work (45%), poor posture (20%) and prolonged standing or sitting (20%) were the most frequent activities associated with LBP amongst these workers.⁵ Some studies have found the prevalence of LBP to be stable over several

years.^{4,6,7} In Germany, the prevalence of LBP was found to be stable over a decade.⁶ The high number of patients with recurrent pain makes it difficult to distinguish between prevalence of acute and chronic LBP.

The economic burden of a disease is the sum of all costs associated with that condition which would not otherwise be incurred if that disease did not exist.⁸ However, given the many categories of costs that must be considered (direct, indirect and intangible), it could be challenging to fully estimate the economic burden of an illness as data is often not available. Intangible costs are rarely included when estimating the economic burden of an illness because of the general societal uneasiness about placing a monetary value on these aspects of a disease.⁸

LBP is a costly condition to the society in terms of work absenteeism, health care utilization, and disability benefits. Previous estimates of the total annual cost of LBP in the United States have ranged from \$20-\$50 billion.¹⁰ According to Shekelle et al.,⁹ the direct and indirect costs of low back pain, are estimated at \$60 billion annually in the United States.

A closer evaluation of the economic burden of LBP reveals that it is the commonest reason for activity limitations in individuals under the age of 45,¹¹ the second most common complaint heard in physician's offices,¹² the third leading cause for surgery, and the fifth most common cause for hospitalization.¹³ Hemmila¹⁴ found that about one-third of the direct costs (health care utilization) of LBP was spent on complementary therapies and that sick leaves accounted for 55% of the total cost.

LBP is the most expensive benign condition in industrialized countries and it is the number one cause of disability that affects people less than 45 years. For those older than 45 years, it is the third leading cause of disability.¹⁵ It results in significant restrictions on activities of daily living and participation, such as inability to work.¹⁰ Furthermore, the economic and societal impact of LBP appears to be huge. Individuals with LBP incur millions of dollars in medical expenditure each year in the United States.¹⁰ This economic burden is of particular concern in developing countries where there are already limitations in health care delivery and funds are

directed towards epidemics such as human immunodeficiency virus/Acquired Immune Deficiency syndrome.¹⁶

Methods

The study protocol was approved by the University of Ibadan/ University College Hospital (UI/UCH) joint Institutional Review Committee. Participants for this study were all consenting patients with mechanical LBP who were receiving physiotherapy on an outpatient basis from Ring Road State Hospital, and University College Hospital, both in Ibadan. They were individuals who were not on a health insurance scheme at the time of the study.

The rationale and procedure of the study was explained to each participant and his/her informed consent was obtained. The Roland Morris LBP Disability Questionnaire was used to assess how LBP affected the participants' ability to manage in everyday life in terms of physical disability. The questionnaire is composed of twenty-four items¹⁷ and has proven evidence of psychometric properties of construct validity ($r=0.89$), and test-retest reliability ($r=0.80$).¹² It is scored by simply summing up the items circled on the questionnaire by the participant. It has a minimum score of 0 and a maximum score of 24. A self-developed questionnaire (Economic Burden of LBP questionnaire with component questions/items adapted from information obtained from literature on the socioeconomic impact of LBP) was used to assess the economic burden of LBP for this study. The questionnaire has 43 items and is divided into three sections; Section A has 13 items on socio-demographic information of participants; Section B has 14 items on the direct costs of care; Section C has 16 items on the indirect costs of care. This self-developed questionnaire was assessed for content validity by an expert panel committee consisting of five physiotherapists knowledgeable in the design and development of questionnaires. The instrument was then pretested on 15 patients with low back pain. The patients had a clear understanding of all the items in the self-developed questionnaire.

DATA ANALYSIS

Forty participants completed the two questionnaires

which were self-administered. Descriptive statistics of mean, standard deviation and percentages were used to summarize the data obtained. Inferential statistics of independent t-test were used to compare the economic cost of LBP between male and female patients. A chi square method was used to test the association between economic cost of care and the physical disability of the patients with LBP. Level of significance was set at 0.05.

RESULTS

A total of forty individuals with LBP receiving physiotherapy in secondary and tertiary health institutions in Ibadan participated in this cross-sectional study. The majority (62.5%) of the participants were male. The age group of participants ranged from 30 to 80 years. A large percentage (87.5%) of the participants were forty and above (table 1). Respondents with primary education accounted for the highest (50%) number of respondents. The majority (97.5%) of the participants were married. Traders accounted for the greatest percentage (42.5%) of workers involved in this study. Almost half (47.5%) of the respondents reported that the duration of onset of low back pain was less than a year, while 10.0% reported a duration of more than 5 years.

The estimated annual economic cost was averaged at 139,156.25 ± 77,091.16 naira with direct costs (114,661.25 ± 74,230.53 naira) accounting for 82.4% (table 4). About 60.10% of the direct costs was attributed to physiotherapy (68,875.20 ± 53,988.52 naira) followed by the cost of physician’s visit (27009.00 ± 13314.95 naira). The cost of medications was the least (2796.33 ± 903.70 naira) (table 2). The estimated average annual indirect cost was 24,495.00 ± 16,837.13 naira. The estimated average annual cost of transportation of respondents was 17,772.00 ± 13,526.12 naira. Only 27.5% of the respondents were accompanied to the hospital for their treatment. The estimated average cost of transportation of accompanying persons was 12938.18 ± 9331.78 naira per year. Only three respondents had paid helpers whose average cost was estimated at 34,000 ± 19,287.30 naira annually. The

average annual cost of meals outside the home was 9738.46 ± 4850.69 naira annually (table 3). Two-fifths of the participants reported that they did not spend money on meals outside the home. The average loss of work hours per hospital visit was estimated at 10.25 ± 6.75 hours per month.

Table 1. Socio-demographic characteristics of participants

Characteristics	No	%
Sex		
Male	25	62.5
Female	15	37.5
Age group (years)		
30-40	5	12.5
40-50	13	32.5
50-60	11	27.5
60-70	9	22.5
70 and above	2	5
Marital Status		
Married	39	97.5
Single	0	0
Widowed	1	2.5
Cohabiting	0	0
Occupation		
Banking	5	12.5
Trading	17	42.5
Teaching	3	7.5
Security	2	5
Farming	2	5
Driving	2	5
Estate management	1	2.5
Business	4	10
Civil service	2	5
Engineering	2	5
Level of Education		
University	5	12.5
Post secondary	4	10
Secondary	3	7.5
Technical	2	5
Teacher Grade II	3	7.5
Certificate		
Primary	20	50
Incomplete Secondary	1	2.5
Education		
No Formal Education	2	5

Table 2. Direct cost of care of low back pain

Sex	n	%	Annual cost (naira)		
			Mean	SD	%
Physician's Visit					
Male	25	62.5	29169.6	13254.25	
Female	15	37.5	23408	13057.05	
Total	40	100	27009	13314.95	23.56
Physiotherapy Visit					
M	25	62.5	75426	68875.2	
F	15	37.5	86344	62650.55	
Total	40	100	68875.2	53988.52	63
Diagnostic Test					
M	25	62.5	3782	1521.85	
F	15	37.5	2893.33	787.6	
Total	40	100	3448.75	1355.64	3
Topical Creams/Gels/Sprays					
M	2	50	7488	2661.5	
F	15	37.5	7160	2627.62	
Total	40	100	7365	2649.2	6.4
Supportive Devices					
M	2	50	3500	0	
F	2	50	3750	353.55	
Total	4	100	3625	250	3.12
Medications					
M	0	0	0	0	
F	15	100	2796.33	903.7	
Total	15		2796.33	903.7	0.92
Overall			114661.25	74230.53	100

The mean direct cost of care for the male respondents was 109,594.80 ± 54,340.00 naira while that of the females was 123,105.33 ± 49,210.54 naira. The mean indirect cost of care for the male respondents was 24,902.40 ± 975.00 naira while that of the females was 23,816.00 ± 908.12 naira. There was no significant difference (p=0.60) in the overall economic burden of low back pain between male and female participants in this study (table 5).

There was a significant association ($\chi^2 = 37.87$; p= 0.04) between respondents' disability scores and the economic costs of LBP (table 6).

Table 3. Indirect cost of care of low back pain

	n	Annual cost (naira)	
		Mean	SD
Transportation			
Respondent	40	17772	13526.12
Accompanying person	11	12938.18	9331.78
Meals Outside Home	13	9738.46	4850.69
Paid Helps	3	34000	19287.3
Total		24495	16837.13
Hours lost per hospital visit		10.25	6.75

Table 4. Economic costs of low back pain

Economic Costs (Naira)	Mean	SD	%
Direct	114661.25	74230.53	82.4
Indirect	24495	16837.13	17.6
Total	139156.25	77091.16	100

Table 5. Comparison between economic costs of male and female patients with low back pain

Economic Burden	Male	Female	p value
Direct costs	109594.8	123105.33	0.549
Indirect costs	24902.4	23816	0.862
Overall costs	134497.2	146921.33	0.598

Table 6. Association between Respondents' Disability Scores and Economic Burden of Care

Economic costs	Disability	Chi-square value	p value
Indirect costs		24.48	0.02*
Direct costs		23.07	0.05*
Overall costs		37.87	0.04*

*Significant at p < 0.05

DISCUSSION

The economic burden of a disease is the summary of all costs associated with that condition. This means that the burden of a disease cannot be obtained if that condition does not occur in the first place. The economic burden of a disease can further be divided into various categories, these categories include direct cost, indirect cost and intangible cost. However, in this study, the direct and indirect costs of care were summed up as the economic burden. The average annual economic cost of care obtained in this study is enormous relative to the earning capacity of an average Nigerian. It appears there is no comparable published data on the economic burden of low back pain in the Nigerian environment hence comparison can only be made with studies from other parts of the world. Individuals with LBP incur millions of dollars in medical expenditure each year in the United States.¹⁰ The findings of Williams et al.¹⁸ that indirect costs contribute 85% of the total costs of LBP does not support the findings of the present study. In this study, indirect cost contributed 26%. This could be explained by the fact that the majority of the participants bore all the expenses of the direct and indirect costs unlike what obtains in developed countries where healthcare is borne mainly by the government and insurance companies. This study did not include participants whose expenses are borne by health insurance companies.

The ratio of direct costs to indirect costs of care obtained from this study (3:1) supports previous findings that direct cost often contributes largely to the economic costs of disease.^{8,9,10} From a Finnish study reported in 2002, almost one third of the direct back pain costs in health care utilization was spent on complementary therapies and sick leaves which accounted for 55% of the total costs.¹⁴ Physiotherapy visits were a major contributor to the direct cost of care in this study followed by physician visits. This is similar to the findings in Lafuma et al.,¹⁹ where physical therapy contributed the most (41.6%) to the direct cost of care followed by physicians' fees (23.9%).

Indirect costs or productivity losses are the labour earnings that are forgone as a result of an adverse health outcome. The decreased productivity can be a

result of illness, death, side effects, or time spent receiving treatment. Indirect costs include lost earnings and productivity of both patients and the family members who take care of them. For some diseases which result in premature death, the indirect cost is the loss in potential wages and benefits. In this study, indirect cost of care included the cost of transportation to keep appointments, cost of transportation of the accompanied person, cost of meals outside the house, and the cost of paid help. The estimate of indirect cost obtained from this study could be limited by the fact that only a minority of the participants expended cost on meals for accompanied persons, paid help and had meals outside the house. The small sample size of participants in this study is identified as a limitation of this study. More studies are recommended to explore the economic costs of LBP on a larger population.

A closer evaluation of the economic burden of LBP reveals that it is the most common reason for activity limitation in individuals under the age of 45.¹¹ LBP is the most expensive benign condition in industrialized countries and it is the number one cause of disability that affects people less than 45 years and for those older than 45 years, it is the third leading cause of disability.¹⁵ It results in significant restriction on activities of daily living and on participation, such as inability to work.¹⁰ In this study, many of the participants had high scores on the Rolland Morris Back Pain Disability Questionnaire; this can be explained from findings of previous studies where LBP has been identified as one of the leading causes of disability. There was a significant association though between disability and economic burden of LBP based on the results of this study. This finding is similar to that of Becker et al.,²⁰ where a significant association was found between disability and economic cost of LBP.

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