

## The Increasing Cases of Lower Back Pain in Developed Nations: A Reciprocal Effect of Development

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### Abstract

*Lower back pain is a non specific health problem but a general complaint among people of all ages with severe effect and complain among the middle aged and the old. And, surprisingly, the complaint is more rampant in the developed nations than in the developing and under developed nations of the world. The cause has generally been accepted by most researchers around the world to be mechanical than infectious. Our previous research indicated that some postures of the lumbar spine (lower back) are more susceptible to injury and can easily cause pain in the lumbar spine than others. This work has shown that this posture is common among the people in the developed nations due to he highly developed facets of life. The research therefore suggest that the rampant complaint is the result of this posture of the lumbar spine.*

**Keywords:** Lower Back Pain, Developed Nations, Lumbar spine, Posture and Compensation

### 1. Introduction

The increasing cases of back (lumbar spine) pains among people around the world is a thing of concern to both anatomists and stakeholders in the field of health science. Low back pain (LBP) is one of the commonest reasons for people to seek medical treatment in Western societies (Andersson GB 1998, Borenstein DG 1999, Hart LG et al 1995, Picavet HJS and Schouten JSAG 2003 and Stranjalis G 2004.) with the majority of LBP sufferers being classified as having non-specific low back pain (NSLBP). According to a survey published in 2000 almost half the adult population of the UK (49%) report low back pain lasting for at least 24 hours at some time in the year (FactsandFigures, 2013). A report from America Chiropractic Association (ACA) shows that 31 million Americans experience low-back pain at any given time (Jensen M et al 1994). Lifetime prevalence of low back pain is reported to be as high as 79.2% in Australian adults and 84% in adolescents, (Back pain national health priority Area in Australia 2009) with about one in 10 people experiencing significant activity limitation. In Canada, Four out of five adults will experience at least one episode of back pain at some time in their lives (www.statcan.gc.ca ,2006). Lower-back pain is identified as one of the major problems throughout the world with highest prevalence among female individuals and those aged 40-80years (Hoy DG et al 2013).

It is interesting to know that:

- i. Low back pain is the single leading cause of disability worldwide, according to the Global Burden of Disease 2010.
- ii. One-half of all working Americans admit to having back pain symptoms each year (Vallfors B. 1985).
- iii. Back pain is one of the most common reasons for missed work. In fact, back pain is the second most common reason for visits to the doctor's office, outnumbered only by upper-respiratory infections (Global Burden of Disease 2010 ).
- iv. Most cases of back pain are mechanical or non-organic—meaning they are not caused by serious conditions, such as inflammatory arthritis, infection, fracture or cancer.
- v. Americans spend at least \$50 billion each year on back pain—and that's just for the more easily identified costs (Project Briefs 2013).
- vi. Experts estimate that as many as 80% of the population will experience a back problem at some time in our lives(Vallfors B. 1985).

In 2009, the United States Department of Labor reported that the back was injured in nearly 50% of all musculoskeletal disorder (MSD) cases and required a median of 7 days to return to work. It is also reported that in the United States approximately 100 million days are lost from work per year because of low back pain (LBP) Makhsous M 2003). Acute pain is typically pain present in the first month whereas chronic pain usually presents longer than 3 months (Poitras S,2005).

### 1.1 Risk factors

A population-based, prospective study in England found that physical activity outside the workplace was not associated with back pain, but that poor physical health in both men and women, and heavier weight in women, increased the risk of new back pain (Croft PR et al, 1999). The same study found that jobs involving lifting, pulling, or pushing objects of at least 25 pounds, and jobs involving prolonged periods of standing or walking, were associated with a higher incidence of low back pain, especially among women. Hazard magazine (2013) published some jobs with risk of lower back pain to include: Retail staff, Catering/waiting staff, Machine operators, Teaching staff, Assembly line workers, Construction workers, Checkout operators, Hairdressers/barbers, Casino dealers, Dental staff, Postal workers/sorters, Traffic wardens, Industrial laundry staff, Bar/hospitality staff, Health care workers, Museum staff, Nursery staff, Library assistants, Reception staff, Warehouse staff, Meeter-greeters, Canvassers, Bank staff, Cleaners, Flight attendants, Ticket collectors, Janitorial staff, Maintenance workers, Security workers, Cabin staff with ferry operators., Dockers, Floor walkers - Jobcentreplus, Printers, Laboratory technicians, Firing range instructors, Leather cutters, Personal trainers, Baggage handlers, Dispensers in doctor's surgeries, Gardeners, Dot com picker (Supermarket internet shopping), Hair stylist, Pharmacy technicians, Hotel desk clerk, Printing press workers, Seafaring industry, Engineers, Florists, Supermarket meeters and greeters, Optician staff, Veterinary technicians, Police officers, Gym instructors, Prison officers Refuse loaders, Invigilators, School dinner staff and Theatre ushers / front of house staff

## 2. Material/Method

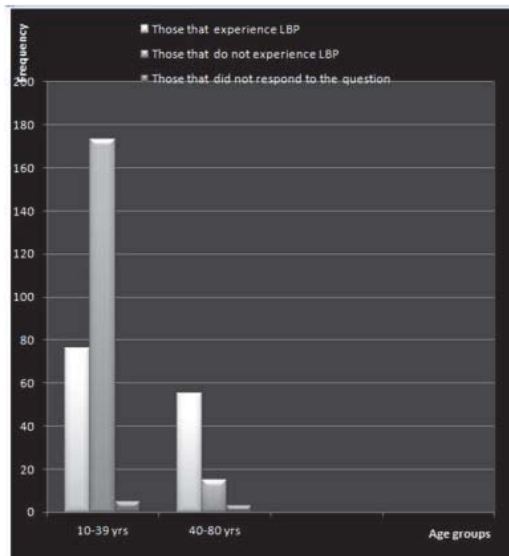
The research made used of a questionnaire. Three hundred and twenty-seven (327) respondents responded to questions ranging from age category, lower back health status and occupation. Out of these respondents, two hundred and fifty-four (254) are between the ages of 10-39 years old while seventy-three (73) are between the ages of 40-80 years.

In the age group of 10-39 years, the number of respondents that experience LBP is seventy-six (76) while those that do not experience LBP are One hundred and seventy-three (173) and only five (5) did not respond to the question. Also, twenty-seven (27) know the cause of their LBP and two hundred and eight (208) do not know the cause while only Nineteen (19) decided not to

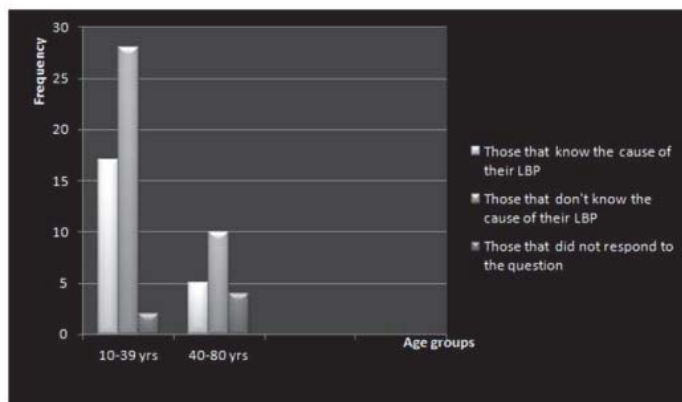
respond to the question.

In the age group of 40-80 years, the number of respondents that experience LBP is fifty-five (55) and those that do not experience LBP are fifteen (15), only three (3) remained silent about the question. Likewise, Thirteen (13) know the cause of their LBP whereas fifty-five (55) do not know the cause of their LBP and only four (4) did not respond to the question.

**Figure 2.1:** A chart showing responses to questions on lower back pain



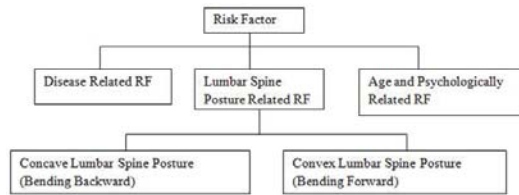
**Figure 2.2:** A chart showing responses to questions on cause of lower back pain



### 2.1 Classification of risk factors

Mafuyai et al (2013) showed that the non-specific lower back pain is caused by "virtual weight" which is weight resulted from the change in posture of the lumbar spine. Hence, in this work we classified the risk factors into three major categories as shown in Figure 2.1.1

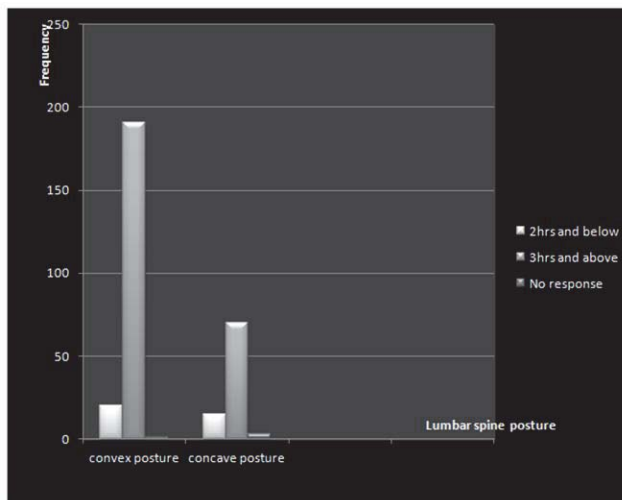
**Figure 2.1.1:** A chart showing classes of risk factors



In the research two hundred and ninety-nine (299) respondents indicated their occupations while twenty-eight (28) remained silent. The occupations were classified according to the posture the create on the lumbar spine e.g seating with the dorso rested on the seat rest or seating and leaning on/ towards the table will create a convex lumbar spine posture whereas, seating upright, standing upright and standing and raising of hands or looking upward will create a concave lumbar spine posture. Of the two hundred and ninety-nine respondents that indicated their occupation, two hundred and twelve (212) have a convex lumbar spine posture when doing their work while eighty-seven (87) have a concave lumbar spine posture when doing their work.

In the convex lumbar spine posture category, one hundred and ninety-one (191) can work for at least three (3) hours before experiencing LBP while only twenty (20) can work for at most two hours and one (1) did not indicate duration. However, in the concave lumbar spine category, seventy (70) can work for at least three (3) hours before experiencing LBP while fifteen (15) can work, at most, for two hours and three (3) remained indecisive.

**Figure 2.1.2:** A chart showing variuos postures and the duration at which lbp sets in.



### 3. Results and Discussion

In Figure 2.1, the number of respondents that do not experience LBP at the ages of 10- 39yrs is far greater than those that experience it, this means that a country whose workforce is dominated by this category of people will pay less compensation for occupational health (Physiopedia, 2013). However, at the ages of 40-80yrs, the reverse is the case which further confirms that LBP is more prevalent among the aged (Anthony Delitto, 2012, Domian Hoy, 2012) and this may be one of the

reasons America and other developed nations spend huge amount on Worker's health compensation (Project Briefs 2013, Stephanie G Wheeler, 2013) since the workforce is over represented by the elderly and underrepresented by the young due to aging of the workforce and the simultaneous negative or zero growth of the population (WHO, 1994).

In Figure 2.2, the number those that know the cause of their LBP is still lower than those that don't know irrespective of the age group. This is in agreement with other researches that indicated that the cause of LBP is not easily specified (George E. Ehrlich 2003, Andersson GB 1998, Borenstein DG 1999, Hart LG et al 1995, Picavet HJS and Schouten JSAG 2003 and Stranjalis G 2004).

In Figure 2.1.2, the percentage of those that work for long duration under a convex posture condition is higher than those under concave posture - it is 90 and 80 percent respectively while the percentage of those that work for lesser duration is less in convex posture related jobs than in concave ones - it is 9 and 17 percent respectively. This implies that bending forward reduces stress from the lower back and this may be the reason why people often bend forward when they are old.

Industrialization and advances in science and technology have reduced jobs in the developed nations to those that produce a concave lumbar spine posture e.g in developed nations, Agriculture is mechanized which involve heavy duty machines. The drivers of this machines in most cases require seating upright to operate these machine while other workers in the processing chain line most of the time stand on their feet to do their work however, in developing nations most of the Agricultural activities are done under the convex posture by bending forward. Also, sedentary workers in developed nations mostly work seating upright because of computerization except for well designed seats and tables whereas in developing nations workers bend forward most of the working hours in order to write using pens. In fact, there is growing concern on the need for workers to stand and do their work in the developed nations (hazards Magazine, 2013).

#### 4. Conclusion

Research by Kaitlin M. Gallagher (2013) attempted to attribute the LPB to posture of the lumbar spine but the explanation is still vague since it has not categorically say the various postures and their role in causing LBP. However, this research has achieved that and has identified most jobs in the developed nations to be concave posture prone which has a negative impact on LBP. Hence there is need for a reduced Standard working hours (Wikipedia, 2013) in the developed nations as seen in Figure 2.1.2 if less Worker's health hazard compensation must be paid and recruitment of younger workforce as seen in Figure 2.2

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