

# Frequency of Low Back Pain due to Heavy Bags among School-going Children in Lahore, Pakistan

Nahid Afzal<sup>1</sup>, Hafiz Muhammad Asim<sup>2</sup>, Hira Dilshad<sup>3</sup>

<sup>1</sup>Physical Therapist, MediUrge Pvt Lmt, Township Lahore

<sup>2</sup>Assistant Professor, Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore

<sup>3</sup>Senior Lecturer, Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore

**Abstract:** It is a daily observation to see children carrying heavy bags to and from their schools. The practice may seem harmless but can cause serious health implications in these children as they are in critical stage of their development. These overstuffed bags can be a reason to back, neck and shoulder problems, if not carried properly. The purpose of this study was to find out the frequency of low back pain due to heavy bags among school going children of Lahore, Pakistan. A descriptive study was conducted on 165 students of 5<sup>th</sup> to 7<sup>th</sup> class of both public and private schools of Lahore District and sample was selected by no-probability purposive sampling. Out of 165 students, the mean age was 11.78 years (Range 9-16 years  $\pm 1.17$ ). Mean body weight of a student without carrying bag was 38.21 kg  $\pm 10.21$ , the mean body weight with school bag was 44.27 Kg  $\pm 10.48$  and the mean weight of school bag was 6.06 kg  $\pm 1.59$ . 69% students complained pain in their back and shoulder regions, while the frequency of low back pain was 18.2%, shoulder pain was 38.8% and of shoulder and upper back was 11.8%.

**Keywords:** Low Back Pain, Lahore school children, Heavy school bags.

## 1. Introduction

### 1.1 Overview

Back pain in children was uncommon earlier but now it is becoming a serious problem. Some causes of back pain in children includes; gender – female is more common, age – children at 10-13 years, heavy school bags especially carried on one shoulder, incorrectly packed backpacks, sedentary lifestyle, soft tissue injuries. [1] Every day hundred and thousands of primary, middle and secondary school students rush towards their schools with overstuffed and heavy backpacks hanging over their shoulders. It looks harmless but can cause painful back and neck problems among students who do not carry their bags properly. These children sometimes carry weight 30% to 40% of their own weights that is too much. Dr. Seymour Zimble – an Orthopedic Surgeon recommend that children should carry their bags not more than 10%-15% of their total body weight. [2]

When the school children walk with a heavy load on their back or shoulders they may change their posture: they lean forward and raise their heads. According to an Australian physiotherapist the weight of school bags and time carried have an adverse effect on cervical and shoulder region that may lead to a forward head posture? [3]. A study performed in Italy found that children of 11 years old were carrying backpacks that were 20% of their body weight, and almost 58.4% students complained back pain more than once in their lifespan. [4]

Different international medical associations have advised that a child should not carry more than 10% -15 % of their total body weight. [5] A cross-sectional study of 1126 children, reported that the use of heavy backpacks and weight are independently associated with back pain. [6]

In a survey from Auburn University it was found that the average weight of the backpack was 17% of the child's own weight, out of total students 67.2% felt back muscle soreness, 50.8% back pain, 24.5% numbness and 14.7% shoulder pain. [7]. In another study out of 1403 school children 61.4% were carrying backpacks 10% of their own body weight and back pain was found in 50% of those students carrying heaviest backpack (OR 1.50 CI 95% 1.06 to 2.12) with 42% of other back pathologies. Girls experienced a higher risk of back problems due to their short stature and thin body mass. [8] Kriti Saraswat has stated the recommendations of Dr. Zubeir Patel, an Indian Physiotherapist, that a child should carry maximum 10% of his/her total body weight with lunchbox and water bottle. When a child carries a backpack that exceeds his/her own body weight, it can lead to different musculoskeletal problems such as forward head posture, upper and low back pain and shoulder pain. [9] In Pakistan, now and then an article or two is published in newspapers to highlight the poor situation of school-going children. Anwer Sumra wrote in the Express Tribune Newspaper that the weight of his son's bag, and the weight of the bag of other school children were heavier than their own weights. Most of the children were bending over backwards due to the weight of the load on their backs, hence being susceptible to back or health related problems in the future. [10]

### 1.2 Objectives

Objective of this study is to evaluate the frequency of low back pain in Lahore school children and to describe school, family, and personal factors among these children.

### 1.3 Rationale

The Rationale of this study is to reduce the proportion of low back pain in school children.

## 1.4 Operational Definitions

### 1.4.1 Low Back pain

Feeling of pain in the lumbar region of spinal column.

## 1.5 Materials and methods

### 1.5.1 Study Design:

Descriptive Observational study

### 1.5.2 Setting:

Study was conducted in the selected one public (Government model degree school Town Ship) and one private (DPS Township) of Lahore.

### 1.5.3 Duration of study:

The study took 4 months from November 2013 to February 2014.

### 1.5.4 Sample Size:

Sample size was calculated by the following formula

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where Confidence level = 95% and for 95% Confidence level **Z** was 1.96

**p** (proportions/Confidence interval) = 10% [4]

**q** = 1-p, **e** = half width of the desired interval

Total 165 male and female school students were included in the study.

### 1.5.5 Sampling Technique:

Non-probability purposive sampling

### 1.5.6 Sample Selection:

Sample was selected by the following criteria:

### Inclusion Criteria

- Students of selected 1 public and 1 private schools of Lahore.
- Both male and female students willing to participate.
- Students studying in 5 to 7 class (grade).

### Exclusion Criteria:

- Students studying in low grade (1-4) and high grade (8-10) were excluded.
- Students suffering from any musculoskeletal disorder.
- Students suffering from any metabolic or neoplastic disorder.

## 1.6 Data Collection Procedure

A descriptive observational study was conducted in the local public and private schools of Lahore during 2013 to 2014 including students of 5-7<sup>th</sup> grades. An informed consent was taken from the concerned authorities of the respective schools by explaining purpose and objectives of the study. The students were selected by non-probability purposive sampling and screened according to inclusion and exclusion criteria. A pre planned questionnaire was used to collect the information that included both open and closed ended questions. Privacy, Confidentiality and Anonymity was maintained with honesty and impartiality.

## 1.7 Data Analysis

### 1.7.1 Tools/scales:

Descriptive statistics were used to determine the mean, standard deviation and frequencies of the following variables like age, gender, class (grade) of student, weight of student, and weight of bag; if back pain was present its symptoms and duration were mentioned. Weights of the students were measured by digital weight measurement machine. Pain was assessed by using the Wong-Baker Faces Pain Rating Scale. Posture of the students was measured by Wall test. (Melanie Pinola. August 23, 2011). Variables like age, class, weight and pain were arranged in frequency distributions. Data was entered by using SPSS version 20 and was analyzed by Interactive Statistical Calculator.

## 2. Results

### 2.1 Table no 1.

Statistics

Age (kg)(kg)	Body Weight years	Body weight Without bag	weight of school with bag	bag ( kg)
Mean	11.78	38.21	44.27	6.06
Std. Deviation	1.17	10.21	10.48	1.59
Maximum	10.00	82.0	89.10	11.20
Minimum	9.00	23.80	28.50	1.00

The questionnaires were filled from the 165 school students, from this data the mean age of the student was 11.78 years (Range 9-16 years  $\pm 1.17$ ). Mean body weight of a student without carrying bag was 38.21 Kg  $\pm 10.21$ , the mean body weight with school bag was 44.27 Kg  $\pm 10.48$  and the mean weight of school bag was 6.06 Kg  $\pm 1.59$ .

### 2.2 Students experience any pain?

No.	Groups	Frequency	Percentage%
1	Yes	114	69.1%
2	No	51	30.9%
Total		165	100.0%

Results showed that out of 165 students 114(69.1%) complained pain in their back and shoulder regions while

carrying their heavy bags and 51(30.9%) did not complain any pain.

### 2.3 Area of Pain

No.	Groups	Frequency	Percentage%
1	Shoulders	64	38.78%
2	Shoulder and Upper back	17	10.3%
3	Upper back	3	1.8%
4	lower back	30	18.2%
	Total	114	69.1%
	Without pain	51	30.9%
	Total	165	100.0%

Out of 114 students, 64(38.8%) experienced pain in their shoulder, 17(10.3%) in shoulder and upper back, 3(1.8%) in upper back and 30(18.2%) in their lower back.

### 2.4 Posture of student with bag

No.	Groups	Frequency	Percentage%
1	Normal	47	28.5%
2	Forward head	62	37.6%
3	Sideways bend	56	33.9%
	Total	165	100.0%

While carrying their bags 62(37.6%) students had a forward head posture, 56(33.9%) had sideways bent and 47(28.5%) were with normal posture.

### 3. Conclusion

The results have revealed that average school bag weighed 6 kg that was 16% of the student's total body weight. About 56% (93) students were carrying bags that were more than 15% of their total body weight while 93% had bags greater than 10% of their total body weight. Mostly students were carrying heavier school bags of 6-11 Kg(16%-34% of their total body weight) and Frequency of low back pain was 18.2%. Type of school bag, way of carrying bag, heavy schedule, leaning forward, pain in shoulder and back, homework and posture with bags were the defining factors among school children.

### References

[1] Better Health Channel. (March 2013). Back pain – children. [Online] Available at: <[http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Back\\_pain\\_children](http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Back_pain_children)> [Accessed 24 October 2013]

[2] Tamra Orr. (September 2000) Backpack May Spell Backache. *Current Health Sciences Journal*.

[3] Chansirinukor W et al (2001) Effects of backpacks on students: measurement of cervical and shoulder posture. *Australian Journal of Physiotherapy*, **47**: 110-116.

[4] Paloma et al (2012). School Children's Backpacks, Back Pain and Back Pathologies. *Medscape*, 2012,97(8): 730-732.

[5] Cavallo et al. (2002). Cavallo CM, Hlavaty TM, Tamase MG. A pilot study for the development of a primary prevention program: What is the average weight of a fourth grader's backpack? *Work*, **20**: 137-158.

[6] Sheir Neiss GI et al (2003). The association of backpack use and back pain in adolescents. *Spine*, **28** (9): 922-930.

[7] Airpacks Systems Inc. (Aug 9, 2011). Facts about Carrying Backpacks and Backpack Injuries. [Online] Available at: <[http://www.airpacks.com/documents/facts\\_about\\_backpacks\\_and\\_injury.pdf](http://www.airpacks.com/documents/facts_about_backpacks_and_injury.pdf)> [Accessed 24 October 2013]

[8] Tara Parker-Pope. (July 21,2009). Weighing School Backpacks. *The New York Times* [Online] Available at: <[http://well.blogs.nytimes.com/2009/07/21/weighing-school-backpacks/?\\_r=0](http://well.blogs.nytimes.com/2009/07/21/weighing-school-backpacks/?_r=0)> [Accessed 26 October 2013]

[9] Kriti Saraswat. (June 24, 2013). The ill-effects of carrying heavy schoolbags, [Online] Available at: <<http://health.india.com/diseases-conditions/the-ill-effects-of-carrying-heavy-schoolbags>> [Accessed 25 October 2013]

[10] Anwer Sumra (April, 2013). Is your child's backpack too heavy, *The Express Tribune*. [Online] Available at: <<http://blogs.tribune.com.pk/story/16714/is-your-childs-backpack-too-heavy/>> [Accessed 24 October 2013]

### Author Profile



Nahid Afzal is Physical Therapist , MediUrge Pvt Lmt, Lahore



**Hafiz Muhammad Asim** is Assistant Professor in Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore



**Hira Dilshad** is Senior Lecturer in Lahore Medical & Dental College, Department of Physical Therapy, Canal Bank Road, Lahore