

THE SCHOOL BAG'S WEIGHT INFLUENCE ON THE PHYSICAL STATUS OF SCHOOL GOING CHILDREN

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled-

**THE SCHOOL BAG'S WEIGHT INFLUENCE ON THE
PHYSICAL STATUS OF SCHOOL GOING CHILDREN**

Submitted by **Tithi Anthonia Corraya**, for partial fulfilment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. PT).

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Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent from the department of Physiotherapy, Bangladesh Health Profession Institute (BHPI).

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Contents

	Page No.
Acknowledgement	i
Acronyms	ii
List of Tables	iii
List of Figures	iv
Abstract	v
CHAPTER-I: INTRODUCTION	1-10
1.1 Background	1-6
1.2 Rationale	7
1.3 Research question	8
1.4 Aim of the study	9
1.5 Objectives	9
1.5.1 General objective	9
1.5.2 Specific objectives	9
1.6 Conceptual framework	10
CHAPTER-II: LITERATURE REVIEW	11-19
CHAPTER-III: METHODOLOGY	20-24
3.1 Study design	20
3.2 Study area	20
3.3 Study population	20
3.4 Sample size	20
3.5 Inclusion criteria	21
3.6 Exclusion criteria	21
3.7 Sampling technique	21

3.8 Data collection method and tools	21
3.9 Data collection procedure	22
3.10 Questionnaire	22
3.11 Data Analysis	21-23
3.11.1 Chi Square test	22
3.11.2 Situations for Chi Square test	22
3.11.3 Assumptions for Chi Square test	23
3.11.4 Calculation of (χ^2) Statistic	23
3.12 Ethical consideration	24
CHAPTER-IV: RESULTS	25-50
CHAPTER-V: DISCUSSION	51-54
CHAPTER-VI: CONCLUTION & RECOMMENDATION	55-56
REFERENCES	57-62
APPENDIX	63-72
Verbal consent in English	63
Verbal consent in Bangla	64
Questionnaire in English	65-72
Questionnaire in Bangla	63-72
Permission letter	73-75

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Acronyms

BHPI	: Bangladesh Health Professions Institute
BMRC	: Bangladesh Medical Research Council
BW	: Body Weight
CRP	: Centre for the Rehabilitation of the Paralysed
CV	: Cranio-Vertibral
IRB	: Institutional Review Board
LBP	: Low Back Pain
SPSS	: Statistical Package of Social Science
UBP	: Upper Back Pain
UK	: United Kingdom
USA	: United States of America
WHO	: World Health Organization

List of Tables

Table-1: Age of the participants

Table-2: Features of a backpack/bag for waist belt

Table-3: The features of a backpack/bag for Wheels

Table-4: Musculoskeletal discomfort due to carrying bag

Table-5: Distribution of respondents between bags that are used most often to carry books and methods of carrying backpack

Table-6: Association between bags that are used most often to carry books and methods of carrying backpack

Table-7: Distribution of respondents with Weight of the participants and backpacks weight more than ten percent of body weight

Table-8: Association between weight of the participants & backpacks weight more than ten percent of body weight

Table-9: Distribution of respondents with bags are used most often to carry books & the features of a backpack/bag for padded shoulder strap

Table-10: Association between bags are used most often to carry books & the features of a backpack/bag for padded shoulder strap

Table-11: Distribution of respondents with methods of backpack carriage and reason that the backpack is carried in the same manner

Table-12: Association between methods of backpack carriage and reason that the backpack is carried in the same manner

Table-13: Distribution of respondents feeling of pain now that you believe is due to wearing your backpack/bag and the areas that where the pain is located

Table-14: Association between feeling of pain now that you believe is due to wearing your backpack/bag and the areas that where the pain is located

List of Figures

Figure-1: Sex of the participants

Figure-2: Educational level of the participants

Figure-3: Types of bag carried by the participants

Figure-4: Method of backpack carriage

Figure-5: The weight of the backpacks

Figure-6: Backpack's weight is compared with 10% of body weight

Figure-7: The features of a backpack/bag for chest strap

Figure-8: The features of a backpack/bag for padded shoulder strap

Figure-9: Carrying bag in a normal day

Figure-10: Feeling of tiredness during carrying their bag

Figure 11: Reason that carried bag in that manner

Figure-12: Carried backpack/bag normally on the way to school

Figure-13: Walking with your backpack/bag, say you stand up straight

Figure-14: Walking with their backpack/bag, assumption any of the postures

Abstract

Purpose: To explore the musculoskeletal symptoms due to carrying heavy school bag's of children. **Objectives:** To find out socio demographic information of the schoolchildren, to investigate the use of school bags and approximate weight for a children and the occurrence of musculoskeletal symptoms among primary school children, investigation the weights of backpack. Investigation of percentage of body weight carried, to determine backpack weight to body weight ratio, to determine discomfort due to backpack and schoolbag carriage and to find out the musculoskeletal discomfort due to carrying school bag. **Methodology:** Cross sectional type of study design was used to conduct the study where 116 participants from selected school. The data was collected by using a semi structure questionnaire form and were analyzed through content analysis. **Result:** Out of 116 most of the participants were 13 years aged children were 41%, 14 years aged children were 25%, 12 and 15 years aged children 18% & 16%. Among them boys were 53% (n=62) and girl 47% (n=54). So this result shows that boys were more vulnerable than girls. 116 participants were conducted in this study, among this 4.3% (n=5) were suffering from muscle soreness, 19.8% (n=23%) were suffering from upper back pain. 9.5% (n=11) were suffering from lower back pain and 7.8% (n=9) were suffering from leg pain. 37.1% (n=43) suffering from neck pain, 11.2% (n=13) suffering from arm pain. 2.6% (n=13) were suffering from tingling in pain, 7.8% (n=9) did not suffer from any condition. Among the 116 participants that 83.62% (n=97) of participants carried weight more than 10% of their body weight and 16.37 % (n=19) participants didn't carry more than of their body weight. **Conclusion:** The result of the study demonstrates that excessive weight bearing and prolong carrying of school backpack cause musculoskeletal discomfort. So only awareness like- parents concern, school administration steps, children should be educated on ergonomics as a part of their school programme, including instructions on carrying a backpack and the effects of disregarding the basicrules on body posture. A load of 10% of the body mass may induce negative changes in spinal posture. **Keywords:** School bag; Load carriage; musculoskeletal symptoms; Weight limit; Children

1.1 Background

As society has turned out to be more portable, the physical requirements of youngsters have changed. Understudies now convey books and supplies to, from and regularly along with school in a backpack alluded to as a knapsack, backpack, rucksack, book travel bag, book pack or book pack (Talbot et al., 2009). A backpack is being carried by children common among schoolchildren. Nowadays, approximately 90% of children in developed countries carry a backpack (Drzał-Grabiec et al., 2014).

In children and adolescents, the development of musculoskeletal disorders might be contributed by the environment particularly in schools. At this time, the bone structure is developing and disorders can cause orthopaedic and rheumatologic diseases. Right now, the bone structure is creating and disorder can bring about orthopaedic and rheumatologic ailments (Jayaratne, 2012).

The reason for musculoskeletal issue in young people is multifactorial, including for instance support in games or exercise, long stretches of latency, poor stance while sitting, and wearing knapsacks that are over weighted (Shamsoddini et al., 2010).

Backpack is the suitable approach to load the spine nearly and symmetrically while looking after stability. For carrying necessary equipments which is increased substantially by the use of backpack. Knapsacks are becoming up plainly more and more typical in school youngsters for conveying textbooks, portable PCs, water bottles, lunch boxes and so forth. However, the utilization of substantial rucksack prompt create diverse musculoskeletal distress among the school youngsters and it turns into a concern range for ergonomists. Indeed, even in everyday clinical practice, knapsack related wounds turned out to be essentially necessary. Thinks about have uncovered that "Knapsack load carriage expands ground response forces and builds the stiffness in the furthest point that can bring about transmission of higher measure of strengths from the bring down limit to the head. Studies have shown that the schoolchildren across the world suffer from musculoskeletal pain or discomfort in the shoulder and back (Sharan et al., 2012).

Musculoskeletal conditions keep on being a considerable misfortune for general well being with studies on this angle being a subject of various occupations, schoolbag utilize or carriage; Conveying schoolbag is a methods for applying outer powers to the body and has been normally connected with postural and step deviations. Substantial schoolbag stack and ill-advised schoolbag utilize can undermine to the strength of understudies as studies have demonstrated these elements are related with muscle irregularity, dreary strains to the body, extreme weight on joints and tendons, increment in vitality utilization and lessening in lung volumes (Rai & Agarawal, 2013).

When one thinks of children and school, one usually also pictures some type of bag to carry books and other school materials. The bag of choice for over 40 million students in the United States is the backpack (Bauer & Freivalds, 2009) various objects in an organized manner with both shoulders which is carried by the students. Musculoskeletal disorders represent a significant problem of modern society, which are more and more pronounced in young people, and children of school age. The frequency of musculoskeletal pain depends on the age of respondents, methods and definitions of pain and ways of collecting data. Research indicates that about 53% of adolescents experienced musculoskeletal pain at least once in their lifetime, while 15% had persistent musculoskeletal pain at least once a week (Azabagic et al., 2016).

To provoke pain, heavy schoolbag weight is recurrently well thought-out to have negative effects on posture and hypothesized. The growth of the musculoskeletal system passes through different phases while the child grows predominantly, body weight (BW) and height show, skeletal stature a constant increase approximately the age of 10 to 11 years from the age of 5 years onward until. It had been stated that a number of negative impacts on health may have by carrying a backpack (Dockrell & Blake, 2015). In recent years, there has been an increasing concentration to the amount of loads carried by schoolchildren to and from school (Dianat et al., 2011). The mean school bag weight reported in previous studies in other countries has a range between 4.7 kg and 9.3 kg (Pua, 2010).

There are so many researches, which found that the safe use of children's schoolbags has been describing by various influencing factors. The characteristics of the bag, such as bag design and load distribution features are focused which is included by the

various influencing factors. The method of carriage, the distance or duration of carriage, the weight of the bag and its relative weight to that of the child's body weight, and the child's perception of schoolbag weight have also been investigated. However, in spite of this research, the search for evidence upon which to base schoolbag weight limit guidelines continues (Kellis & Emmanouilidou, 2010).

A person is permitted to carry items such as books while having the hands free for other activities by the backpack. A question is there, however, have arisen related to backpack safety. There are three mechanisms of injury mainly cited as being related by using of the school bags by school-aged children were wearing, lifting, or taking off the schoolbags. The another mechanisms of injuries were tripping over the backpack, reaching into the backpack, or getting hit by the backpack by another student. Jacobs et al. (2007) hypothesized that there are a strong correlation which lies between musculoskeletal injuries and incorrect backpack use and that has caused a debate over the exact reason for increasing in back pain. Steele et al. (2003) suggested that experts as a plausible measure of the potential for spinal pain has accepted a change in spinal posture. In recent years, there has been an increasing concentration to the amount of loads carried by schoolchildren to and from school (Dianat et al., 2011). The mean school bag weight reported in previous studies in other countries has a range between 4.7 kg and 9.3 kg (Pua, 2010).

Shamsoddini et al. (2010) found that although there are so many factors that can cause to musculoskeletal symptoms in school students, which increased involving in sports or exercise, while sitting in a poor posture, and long periods of lack of activity, and bearing a heavy backpack is evidently a assumed factor. Unquestionably transporting too much weight in a schoolbag, or taking it incorrectly a long-term musculoskeletal problems can be caused in all children. Hong et al. (2005) perceived that Significantly, A relationship has been found between the carriage of schoolbags and posture and gait of students, and suggested that the effect of this might lead to a mixture of musculoskeletal problems such as muscle soreness, numbness, back pain and complains of shoulders. Since spinal pain in adolescents has had been associated by load carriage (Drzał-Grabiec et al., 2014).

A main factor has been by the carriage of heavy backpacks, and therefore represents an ignored physical stress for secondary students. Some studies stated that bad postures such as drop of the shoulders, leaning forward, or using one strap is used by the students by the occurrence of musculoskeletal discomfort. Combined effects of heavy backpack, duration carrying the backpack, manipulating and handling of backpack, method of carrying, position of the load on the body of students are risk factors for musculoskeletal complaints associated with backpack carriage (Shamsoddini et al., 2010).

There is an another book-carrying practice which is problematic that is wearing a pack or bag on just one shoulder, by carrying book with only one strap, it's not symmetrical load that's positioned on the back and from few studies we can know that back pain is probably linked by asymmetry and leaning to one side. The main problem is muscle strain. You will find some pain in your back and the muscles are pushed off by the body's reaction to the pain or make them spasm. Then the muscles become weaken because they have been in pain and even less work could be done by them then, so a downward spiral is became by it. A health problem is seemed by the backpacks carried by school going girls as a daily load while in school or may be later in life. The loads carried daily by children would not be allowed in adults as, proportionally, they exceed the legal limits established for workers, 10-12 but no limits have been recognized for application to the workplace of school children, and the limits generally proposed (10-15% of body weight) are widely exceeded every day. Even taking into account the role-played by psychosocial factors in both age groups (Mukhtar et al., 2014).

Backpacks characterize a general consumer product in our modern school system. However, their use may never be without some adverse health effects (Kellis & Emmanouilidou, 2010). Studies showed that musculoskeletal discomforts experienced by growing children are significantly connected to backpack loads and have reported that heavy backpack loads can actually result in changes in posture. However, numbers of these studies are few. The different age ranges of students participated in the various studies may explain some of this difference, but irrespective of age there is a considerable number of students lifting and carrying in more of 10% of their body

weight. However, some studies stated that musculoskeletal complaints in students are multifactorial (Macki & Legg, 2008).

Evidence has been there that the prevalence of musculoskeletal problems in school children and adolescents is increasing (Ramprasad et al., 2010). Some previous researchers has found that the musculoskeletal system of children could be affected by carrying heavy schoolbags and are likely to cause of some various problems such as changes in head/neck and spinal posture and increase the neck and trunk muscle activity levels. Musculoskeletal complaints in school children might be contributed by an additional factor due to carrying a heavy school backpack (Ramprasad et al., 2010).

A common complaint, with a prevalence ranging from (30%-65%) is being became by back pain in school-age children (Brackley & Stevenson, 2004). Unfortunately, some evidence in the literature shows that pain into adulthood might be still had by which children suffering from low back pain, therefore, prevention is becoming essential. A factor contributing to this high prevalence of back pain in children stems from their increasingly sedentary lifestyle, with more time spent in front of the computer, television, etc. As well, some thoughts are being there that the problem is being contributed by the loading of the vertebrae with backpacks all day. It is thought that its strength might be contributed by a certain amount of stress or load on the spine however, extreme and recurring stress on a child's body may result in overuse injuries. Some injuries reported with backpack use are low back pain, neck pain, shoulder pain, muscle soreness, and rucksack palsy (Brackley & Stevenson, 2004). A backpack, when correctly used with both straps worn evenly across both shoulders, is considered the most appropriate method for maintaining symmetrical load of the spine during carrying tasks. On the other hand, carrying a backpack may also have a number of negative impacts on health. The pervasiveness of musculoskeletal side effects coming about because of conveying schoolbags are winding up plainly more disturbing. Also, different issues credited to conveying schoolbags have been identified, for example, diminished lung work and expanded metabolic expenses (Lasota, 2014).

In many schools, the plan of the furniture does not consider the anthropometric measurements of clients in various age gatherings. This circumstance prompts understudies receiving mistaken stances in classrooms, particularly amid reading and writing and composing assignments where upon they invest the vast majority of their energy. Adopting an inappropriate sitting posture for long periods may lead to greater fatigue in the muscles, and may cause increased pressure on the intervertebral discs and ligaments. The mechanical properties of the spine, improper spine alignment, asymmetrical distribution of loads (either by forces or displacements) and how the spine is supported may lead to aggravation of scoliosis. Thus, biomechanical and environmental factors can affect spine alignment and are often involved in the pathogenesis of idiopathic scoliosis (Minghelli et al., 2015).

1.2 Rationale

Determining an acceptable limit on the load a child can safely carry is important to reduce injuries to the back, neck, and shoulders as well as posture problems. Due to the recent popularity of the subject of children and backpacks, additional research in this area would only strengthen the understanding of the problem.

A particularly important phase is early adolescence (ages 12 to 15). During this time, there is usually a growth spurt and children enter puberty. This is particularly important when carrying a backpack as adolescents in the peak growth period have been found to be at a greater risk for low back pain (Lueder & Rice, 2007). This may be related to weak and vulnerable bones and spine, as well as developing tendons, ligaments, and muscles, but has not been proven.

As a physiotherapy student, it is important to know how much weight should carry by the population as well as school children and excessive weight carrying is harmful for the spine. The aim of this present study is to find out the prevalence of musculo–skeletal discomfort among 12-15 years school children at two selected schools.

This study not only plans to add to the literature on the subject of children and backpacks, but also to contribute to the development of acceptable load limits for children and investigate the effect of school bag weight and carrying methods on back of school going children. The aim of this study was to determine the association between spinal pain and use and perceived load of school bag.

This study will help the researcher to justify the recommended weight for the school children what should they carry a vulnerable weight and identify the level of school bag weight in school children and for those the weight is bearable or unbearable. This study will also help to improve the awareness of children and their parents, especially the influencing factor which affect in physical status as for example- Back pain, upper back pain, lower back pain, neck pain, shoulder pain or arm pain, muscle soreness, leg pain. So physiotherapist can help them and their parents to know them the weight limitation while carrying a heavy backpack, the ways of carrying a bag and can give advice to lower the incidence like back pain, neck pain, shoulder pain, arm pain.

1.3 Research question:

What are the influences on the physical status during carrying heavy weight bag of school going children?

1.4 Aim of the study

To find out the use of school bags and approximate weight for a children and the occurrence of musculoskeletal symptoms among primary school children.

1.5 Objectives

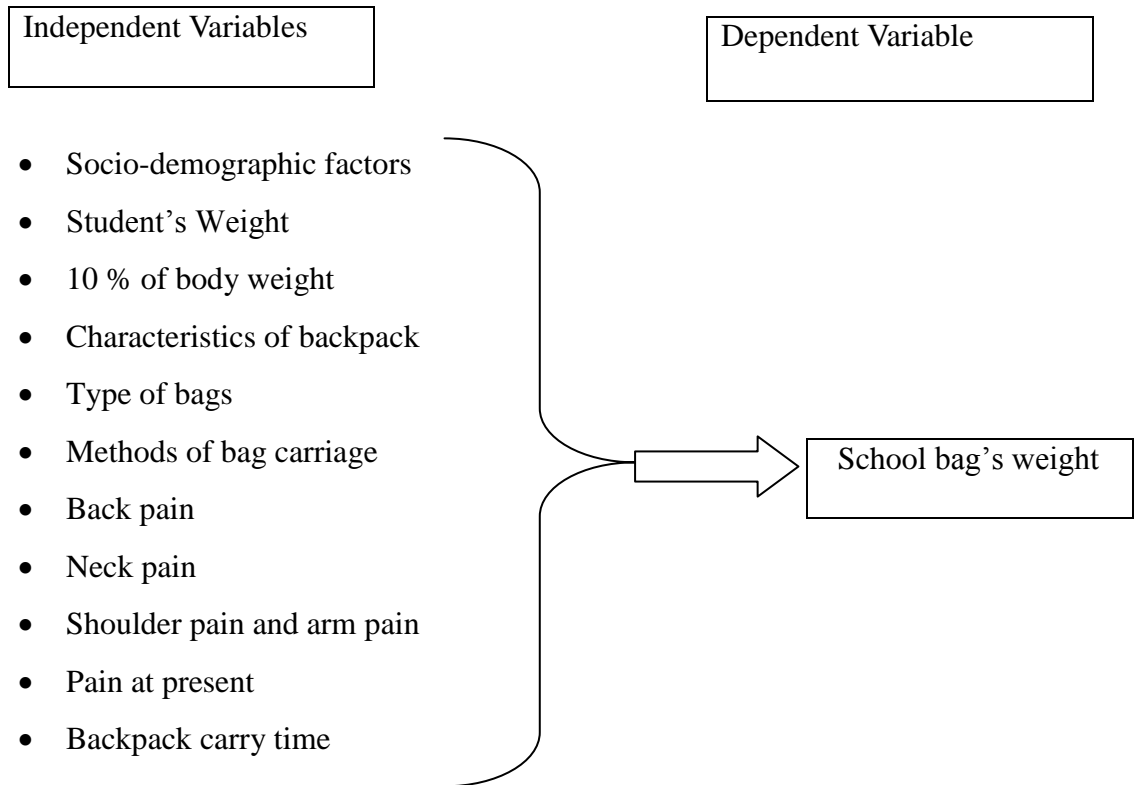
1.5.1 General Objective

To investigate the use of school bags and approximate weight for a children and the occurrence of musculoskeletal symptoms among primary school children.

1.5.2 Specific Objectives

- I. To investigate the weights of backpacks
- II. To investigate percentage body weight carried
- III. To determine backpack weight to body weight ratio
- IV. To determine discomfort due to backpack and schoolbag carriage
- V. To find out the musculoskeletal discomfort due to carrying school bag

1.6 Conceptual framework



Children use backpacks that carry their school supplies to and from school around the world. Studies show that backpacks are used by at least 90% of schoolchildren in the developed world the everyday (Macias et al., 2008). There is particular concern for the junior students in secondary schools, as the spine is at critical stage of development in children between 12-14 year of age (Whittfield et al., 2005). It is believed that reason for excess load into spine is due to heavy weight of children's backpack, and this is causing some apprehension for parents and the students who have to carry those (Mackie & Legg, 2008).

Nowadays the weight of backpacks carried by children has become a growing concern amongst school administrators, parents and health care professionals. The average daily load of Italian students over a week ranged from 22% body weight (BW) to 27.5% BW, backpacks weighing as much as 46% of their BW are being wear by some students, exceeding the 30% bodyweight/load ratio proposed for physically fit adults. Some researchers hypothesize that heavy back pain in school-aged children might be contributed by the heavy school backpacks (Kistner et al., 2012).

It is been speculated that problems might be caused by the backpacks not only for the developing skeletal system but also for a mature spine, as a developed spine is also responsive to load. Moreover, experiencing back pain in childhood is a concern as more common and severe issues later in life might be lead by it (Golriz et al., 2012). Backpacks are used commonly by young people, as they are an effective and most economical way of carrying weight. However, it has been proposed that risk factor for discomfort, fatigue, muscle soreness and musculoskeletal pain especially low back pain could be significantly contributed by them (Golriz et al., 2011). It is very common that is postural disorders and postural changes among the school children. The causes of trunk deformations that are still vague and it will be appeared to be legal by the therefore all studies of the various effects on spinal biomechanics of the spine. We have seen it common that is backpack overloaded (Prashar et al., 2012).

The students are being loaded to 15% of body weight by the backpacks, the spinal curvature occurs. A mixture of risk factors including total weight carried, duration and frequency of carriage and the manner in which the weight is carried affect the musculoskeletal system and the incidence of musculoskeletal pain or discomfort might be influenced by it (Brackley et al., 2009).

According to scientific research, the maximum backpack load which is safe for 10–15% of their body mass must not be exceeded by the children's. There are several studies which have found that the risk of spine pain, posture and gait disorders is increased by backpack load exceeding 15–20% of the child's body mass (Chow et al., 2010). 20% of a child's body mass in the case of a symmetrical load and 10% of a child's body mass in the case of an asymmetrical load must not be exceeded by another study found that the maximum backpack load. Studies on symmetrical backpack load have been widely reported in the scientific literature and their results are largely unambiguous. Most of these studies have focused on evaluation of the suitable weight of the backpack, and the impact of backpack load on posture, gait and back pain. It is still not clear, however, what the acceptable load should be when the backpack is carried asymmetrically (Kistner et al., 2009 ; 2012).

Despite the fact that most children 72.3% prefer to carry their backpack on one shoulder (Hong et al., 2003; 2011). For this reason, we aimed to test the hypothesis that asymmetrically negatively influences spinal curves has been carried by a backpack load of 10% of the child's mass (Kistner et al., 2009 ; 2012).

Children those are carrying loaded and heavier backpacks are creating growing concerns amongst school administrators, parents and healthcare professionals. Exceeding the 30% bodyweight/load ratio proposed for physically fit adults Some researchers hypothesize that back pain in school-aged children may be contributed by the heavy backpacks (Kistner et al., 2012).

Researchers suggest that a significant percentage of a pupil's body weight is represented by the weight of the school bag and a generous load for pupils are considered by it. Furthermore, results from previous research present different mean schoolbag weights (Koley & Kaur, 2010).

There is evidence that the prevalence of musculoskeletal problems in school children and adolescents is increasing. Previous research has shown that the musculoskeletal system of children can be affected by carrying heavy school bags. Which are likely to cause different problems such as changes in head/neck and spinal posture and increase the neck and trunk muscle activity levels which is increased by it that may be an additional factor which is contributing to musculoskeletal complaints in school children might be by carrying heavy school bags. In a study of 140 high school students (mean age 13.6 years) in New Zealand in 2005 carried heavy weighted backpack (Ramprasad et al., 2010).

The guidelines, which are recommended among organisations, are varied by schoolbags load. The American Occupational Therapy Association has recommended backpack load limit not more than 10% student's body weight. While American Academy of Paediatrics (2013) has hypothesised that bodyweight of the students 10% which ranging from to 20% should safety limited. However, these recommendations which are feasible with practical goal and limitations which is at 10% or less is best by it. It is equally important that students develop an awareness of these issues in order to monitor their own practices (Al-Qato & Abu-Hijleh, 2012).

To reduce musculoskeletal problems, a maximum load for school students has recommended weight limit of 10-15% of body weight by a school bag. Though, it is not cleared by literature if the limit set (in terms of percentage of body weight) should be the same for pre-teens, who are at prior stages of their growth, and teenagers (Dianat et al., 2013).

A child's total body weight should not be weighted more than 10 % of body weight by a backpack. In other words, a backpack should not be toted by a child who weighing 85 pounds that weighs more than 12.75 pounds. A pack which weighing more than 21 pounds should not to carry by a child weighing 140 pounds. A person posture can be caused by the weight of a backpack to deteriorate. The improper use of backpacks can lead to muscle imbalance that could turn into chronic back and neck problems later in life. In the UK the average backpack weight is 15-20% of their body weight, and some children carry backpacks as heavy as 30% to 40% of their body weight (Rai & Agarawal, 2013).

When analyzing the literature regarding backpacks, a weight limit which is recommended is being challenging by it, that would prevent injury in all the children due to involved in the development of pain is been involved by the multiple factors, i.e. design, weight, how it is worn, and children's physical fitness. Macias et al. (2008) concluded that perceived pain in the low back was significantly higher while wearing the backpack on one shoulder versus two shoulders. If the evidence is looked by ones, (considered higher evidence in evidenced-based medicine) had conflicting conclusions had been conflicting by the systematic reviews and a clear weight limit is suggested were unable therefore. These reviews agree that more research is needed .Smaller studies performed more recently point to a 10% BW but only one factor is being generally focused by them, such as biomechanical changes. There has been no research performed to prior arrangement that considers all factors in their evaluation and analysis. It would be worth doing other studies, with more subjects, and analyzing many factors concurrently to see if the 10% cut-off point should be suggested (Macias et al., 2008).

In South Africa studied, the relationship, which lies between pain and school bag by carrying in student's age ranging from between 11-14 years. The sample of scholars experienced shoulder and other bodily pains were strongly related to the type of bag and the gender of the children. Although the weight carried did not exceeds 10% of body weight yet pain was being increased there. In a study conducted in Saudi Arabia, the percentage of body weight represented by school backpacks are investigated by them and the researchers recommended that the school bag limit not to be more than 5-10% of student body weight (Al-Hazzaa et al., 2006). Many organized reviews of the literature about schoolbag weight have been undertaken and the majority have concluded that evidence-based recommendations for load carriage, expressed as a percentage of the child's bodyweight, could not be made. Dockrell et al. (2013) concluded that schoolbag weight recommendations were not supported by the literature (Dockrell et al., 2015).

Physical discomfort might be caused by excessive backpack weight. In order to maintain body posture and balance whilst walking children are carrying heavy loads are being forced to bend their trunks forward , which can result in postural defects, in addition, greater pressure on the spine and back muscles exerted by a heavier

backpack. Moreover, in the case of 10 years old children backpack weight in excess of the 10% BW limit causes children to bend forward while walking, and therefore, changes there spirometer parameters—increasing inhalation and exhalation, associated with a more rapid breathing frequency (Skawinski et al., 2011).

Musculoskeletal discomforts are considered multi factorial in origin. Although, the occurrence of these musculoskeletal disorders to loads exceeding the recommended limits have been linked by different studies. However, the development of these disorders might be contributed significantly by other factors, which is related to schoolbag uses. Factors such as backpack design, duration and frequency of carriage, insufficient division of weight in the backpack, method of transport to school, method in which the weight is carried as well as improper carriage may all affect the demands on the musculoskeletal system leading to incidence of musculoskeletal symptoms (Rai & Agarawal, 2013)

Masiero et al. (2008) perceived that, a significant source of long term dysfunction and absence from work has been by the adult back pain which puts a vast economic, social and emotional trouble on individuals and society. Additionally, back pain is a current issue among young people with low back pain prevalence in adolescents measured between 20% to 72%.

Unfortunately, some evidence in the literature shows that the children were suffering low back pain may still have pain into adulthood, therefore, prevention is becoming important. A factor which is contributing their increasingly sedentary lifestyle is stemmed by to this high prevalence of back pain in children, with more time exhausted in front of the computer, television, etc. As well, there are some thoughts that every day is contributing to the issue is being contributed by the loading of the spine with backpacks. It is believed that may contribute to its strength is being contributed by a certain amount of stress or load on the spine however, excessive and recurring stress on a child's body may result in overuse injuries. Some injuries reported with backpack use are low back pain, neck pain, shoulder pain, muscle soreness, and rucksack palsy. Other problems associated with backpack use have been reported, including respiratory problems, winged scapula, foot blisters, tripping accidents, and getting hit by the backpack (Golriz & Walker, 2012).

A main factor is being that the carrying the heavy backpacks, and therefore represents an overlooked physical stress is represented for secondary students. Some studies stated that musculoskeletal discomfort occur when a student uses bad postures such as drop of the shoulders, leaning forward, or using one strap. Combined effects of heavy backpack, duration carrying the backpack, manipulating and handling of backpack, method of carrying, position of the load on the body of students are risk factors for musculoskeletal complaints associated with backpack carriage (Shamsoddini et al., 2010).

Talbotta et al. (2009) hypothesised about of those surveyed, 33.5% of the students were being reported by themselves that they were currently experiencing pain was experienced by themselves that they attributed to backpack use with 54% of the respondents reporting at least one symptom that they attributed to the backpack. Low back pain (LBP) was most commonly reported 33.2% followed by muscle soreness 24.4%, neck pain 23.5%, upper back pain (UBP) - 10.5%. While carrying the backpack children unknowingly place a strain on their body especially, when they use it in one shoulder. Though there is neither any consensus nor any guidelines available for ideal back pack weight, in a study conducted in India, it was found that the mean bag weight carried by urban school children is 7.1Kg which is 17% of their body weight and for rural school children its 3.2Kg. These backpacks can seriously attribute to the regional pains in the children especially in the upper back, shoulder and neck. Musculoskeletal pain or discomfort over the previous 3 weeks were neck 29.2, shoulder 18.8%, back 39%, elbow 9.4%, hand & wrist 15.1%, thigh 21.2%, knee 17.5%, foot and ankle 5.3% for male pupils and among female pupils the pain presentation were neck 27.9%, shoulder 12.4%, back 36.3%, elbow 11.4%, hand & wrist 16.8%, thigh 23.5%, knee (15.4%), foot and ankle 6.7%. Alarmingly the prevalence of musculoskeletal pain was 60.6% in which 180 and 65.7% in which 140 in male and female respectively (Balamurugan, 2014).

Papadopoulou et al. (2013) hypothesised in their studies some type of discomforts in at least one body region was being reported by 82.2% of the respondents that they related to schoolbag use representing a high prevalence. The most prevalent discomfort was found in upper back 38.2% and low back 28% corroborating the results of previous studies.

A number of studies have focused on the connection between carrying a schoolbag and musculoskeletal pain or schoolbag weight and pain. Many researcher reported that high levels of pain or discomfort in the participating schoolchildren. Therefore, comparisons between those who had pain arising from schoolbag use and those who did not may not have been possible. For example, one study found that schoolchildren reported symptoms was reported by 77.1% of the school children but found no link between schoolbag weight and the prevalence of pain. 53 Against a background of high levels of pain it is challenging to assess musculoskeletal pain, also to identify the association of carrying a backpack with pain, and its outcomes and consequences. The studies that focus on schoolbag-related pain are compiled, and are categorized according to whether or not an association was found (Talbot et al., 2009). Several studies reported that pupils are carrying heavy school backpack. There are evidences that show increase in the risk for future low back pain due to carrying a heavy backpack weight are increased by a non-significant. 11.1% of body weight was being by the comparative weight for school backpacks of first graders, 12.5% for the second graders, and for the third and fourth graders between 12.5% and 14.3% (Heuscher et al., 2012).

Neck and shoulder pain has been reported for as moderately common among youths. The 6-month pervasiveness of neck or shoulder torment in any event week by week has been revealed in the vicinity of 11% and 19% in children and between 21% and 38% in females matured 15-25 years. Cranio-vertebral(CV) edge (the edge shaped at the intersection point of a level line through the spinus process of seventh cervical vertebra and a line to the tragus of the ear) was one of the common measures to mirror the forward head posture (Cheung et al., 2009).

A problem has been become by neck and shoulder pain in several countries in current years, with a 1-year incidence ranging from 16.7% to 75.1% for the whole adult population. Furthermore, cervical disease might be indicated by adolescence with the occurrence of neck and shoulder pain in adulthood (Shan et al., 2014).

While conveying the knapsack youngsters unwittingly put a strain on their body particularly, when they utilize it in one shoulder. In spite of the fact that there is neither any agreement nor any rules accessible for perfect rucksack weight, In a

review led in India, it was found that the mean sack weight conveyed by urban school kids is 7.1Kg which is 17% of their body weight and for rustic school kids its 3.2Kg. These backpacks can truly ascribe to the territorial torments in the youngsters particularly in the upper back, shoulder furthermore, neck. The (relative) weight of the schoolbag was not related with the event of neck, shoulder, or potentially back protestations in review. The finding that youthful teenagers with sacks of 18% of their body weight had back torment less frequently vanished in the multivariate strategic relapse examination after change for age, sexual orientation, and school class (Cheung et al., 2009).

A heavy school bag is being carried by children for prolong periods of time which could result in repetitive stress injuries to the developing body. The shifting of the child's centre of gravity is followed by this in the direction of the load while carrying a backpack. Adjustable straps which was a very less percentage of pupils about 15 %. It has been found by researcher that if there is a critical backpack weight-to body ratio that if exceeded affects health (Balamurugan, 2014)

There is confirmation that the commonness of musculoskeletal issues in School children and youths is expanding. Past research has demonstrated that conveying overwhelming school sacks can influence the musculoskeletal arrangement of kids also, are probably going to bring about various issues for example, changes in head/neck and spinal stance and increment the neck and trunk muscle action levels. Conveying overwhelming school packs might be an extra calculate adding to musculoskeletal protests in schoolchildren. In an investigation of 140 secondary school understudies (mean age 13.6 a long time) in New Zealand in 2005, it was found that the musculoskeletal side effects because of school pack carriage were experienced by 77.1% of the understudies and the side effects were most common in the neck, shoulder, upper back and low back (Dianat et al., 2011).

Dianat et al. (2011) hypothesised in their study that approximately 86% of the children reported some type of musculoskeletal symptoms in at least one body region, with shoulder complaints being the most reported symptom (70%), which is similar to findings reported by Whittfield et al. (2005) among secondary school students in New Zealand.

Lifting, conveying and dealing with an overwhelming knapsack on the back causes forward leaning and awful act, which can prompt abundance stack on the spine, and pain and inconvenience in the neck, shoulders and back. Conveying and controlling an overwhelming knapsack makes the secondary understudies not able to keep up appropriate standing and walking posture (Shamsoddini et al., 2010).

Loads that are conveying too substantial might be a contributory component to spinal mal-alignment in youngsters. Outer powers unopposed by inward strengths, for example, solid muscles or tight tendons, may bring about postural misalignment, which prompts remuneration to realign the body. An outer drive, for example, a knapsack, can cause compensatory modifications in both the youngster's stance what's more, amid walk. To keep up stable dynamic adjust, the kid may repay with actuation or unnecessary initiation of muscles that are not typically utilized for realignment (Connolly et al., 2008).

3.1 Study design

This study aim was to find out the use of school bags and approximate weight for a children and the occurrence of musculoskeletal symptoms among primary school children. Cross sectional study design was used for large number of participants to collect data.

3.2 Study area

Data was collected from two selected schools in the urban area of Bangladesh.

3.3 Study population

The study population was the students of two schools children in the urban area.

3.4 Sample size

The equation of sample size calculation are given below

$$n = \left\{ \frac{Z \left(1 - \frac{\alpha}{2} \right)}{d} \right\}^2 \times pq$$

Here,

$$Z \left(1 - \frac{\alpha}{2} \right) = 1.96$$

$$P = 0.73 \text{ (here, } p = \text{prevalence) (Haselgrove et al., 2008)}$$

$$q = 1 - P$$

$$= 1 - 0.73$$

$$= 0.27$$

$$d = 0.05$$

The actual sample size for this study was calculated as 302. In this study, 116 samples were taken to conduct the study due to limitation of the study.

3.5 Inclusion criteria

- Age group between 12-15 years.
- Both boys and girls participants.
- Being in class seven or eight.
- Ability to wear a backpack on 1 shoulder and on both shoulders.
- Participants of Dhaka city school children.

3.6 Exclusion criteria

- Participants who were not willing to participate.
- Participants with psychological problem.
- Having orthopaedic Disease.
- Participants with physical disability and major health problems.
- leg length discrepancy

3.7 Sampling technique

The samples were selected through convenience sampling technique due to less duration of time and it is one of the easiest, cheapest and quicker method of sample selection. Sample will meet the inclusion and exclusion criteria and participate in the study voluntarily.

3.8 Data collection method and tools

The students of urban area of two selected schools children who were available asked to participate in the study. Data was collected by using a semi structured questionnaire with simple wording, because all participants are school children and they understood better in Bangla. The tools that needed for the study were- Consent paper, questionnaire, paper, pen, file, calculator, computer, weight machine and printer. A pilot study was done according to questionnaire.

3.9 Data collection procedure

Data was collected through questionnaire and provide demographic information such as age, sex, school name, weight, students weight compared with 10% of body weight, characteristics of backpack, musculoskeletal discomfort etc.

3.10 Questionnaire

The semi structured questionnaire was used for collecting the data for the outcomes of the study. The questionnaire was composed of some information about personal about personal information such as age, sex, school name, school bag's weight, weight. way go to school, weight of a bag in a normal day physical discomfort.

3.11 Data Analysis

Data was analyzed in Microsoft Excel 2010 using a SPSS 16 version software program. All the data entered into the computer with specific coding and then analyzed using Statistical Package for the social sciences (SPSS) 16 version. The results were presented with the use of percentage (%). The data was analyzed by percentage (%), tables, bar charts and pie chart etc. Chi Square test used to show association between variables.

3.11.1 Chi Square test

Chi square χ^2 test is a nonparametric test of statistical significance for bivariate tabular analysis with a contingency table. Chi square helps us analyze data that come in the form of counts. This test can be applied to nominal or categorical data. The most common application for chi square is to determine whether or not a significant difference exists between the observed counts of cases falling into each category and the expected counts based on the null hypothesis. It is often used to compare two proportions.

3.11.2 Situations for Chi Square test

- Test of association between two events in binomial samples.
- Test of association between two events in multinomial samples.

3.11.3 Assumptions for Chi Square test

- The data must be in the form of frequencies counted in each of a set of categories.
- The total numbers observed must exceed 20.
- The expected frequency in any one fraction must not normally be less than 5.
- All the observations must be independent of each other. In other words, one observation must not have an influence upon another observation.

3.11.4 Calculation of (χ^2) Statistic

Chi square is the sum of the squared differences between observed (O) and the expected (E) data divided by the expected (E) data in all possible categories.

In contingency table problems, writer creates an index that computes for each outcome cell,

$$\frac{(\text{Observed count} - \text{Expected count})^2}{\text{Expected count}}$$

If O stands for observed count and E for expected count, the mathematical notation the formula looks like this:

$$\chi^2 = \sum_{i=1}^k \frac{(O - E)^2}{E}$$

3.12 Ethical consideration

The proposal was submitted and prepared to the Institutional Review Board (IRB) and Bangladesh Health Profession Institute (BHPI) and approval was obtained from the board. The World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC) guideline was al followed to conduct the study. A written/verbal consent was taken from participate before collecting of data. During the course of the study, the samples who were interested in the study had given consent forms and the purpose of the research and the consent form were explained to them verbally. The participants were informed clearly that their information would be kept confidential. The participants were informed or given notice that the research result would not be harmful for them. It was explained that there might not a direct benefit from the study for the participants but in the future case like them might get benefit from it. The participants had the rights to withdraw consent and discontinue participation at any time. It should be assured the participant that his or her name or address would not be used.

In this study cross sectional study design was used to find out the school bag's weight influences on the physical status of the at school children at some selected schools in urban area using self-administrated questionnaire. Total number of participants was 116.

All the data was analysed by SPSS v. 16 software. These results were based on different types of variables such as socio-demographic variables, characteristics of bag, student's weight and 10% of the body weight related variables, conditions due to carrying backpack related variables Here descriptive data were collected and presented by pie chart, bar chart and tables by using Microsoft excel office 2010.

4.1: Socio-demographic information

The study was conducted with 116 participants. Among them 12 years were 18.1% (n=21), 13 years were 40.5% (n=47), 14 years were 25% (n=29), 15 years were 16.4% (n=19). Most of them were 13 years 40.5% (n=47) and 14 years 25% (n=29).

Table 1: Age of the participants

Age of the participants	Number	Percentage (%)
12	21	18.1%
13	47	40.5%
14	29	25.0%
15	19	16.4%
Total	116	100%

4.2: Sex of the participants

Total 116 participants were selected. Among them Boys were 53.4% (n=62), Girls were 46.6% (n=54).

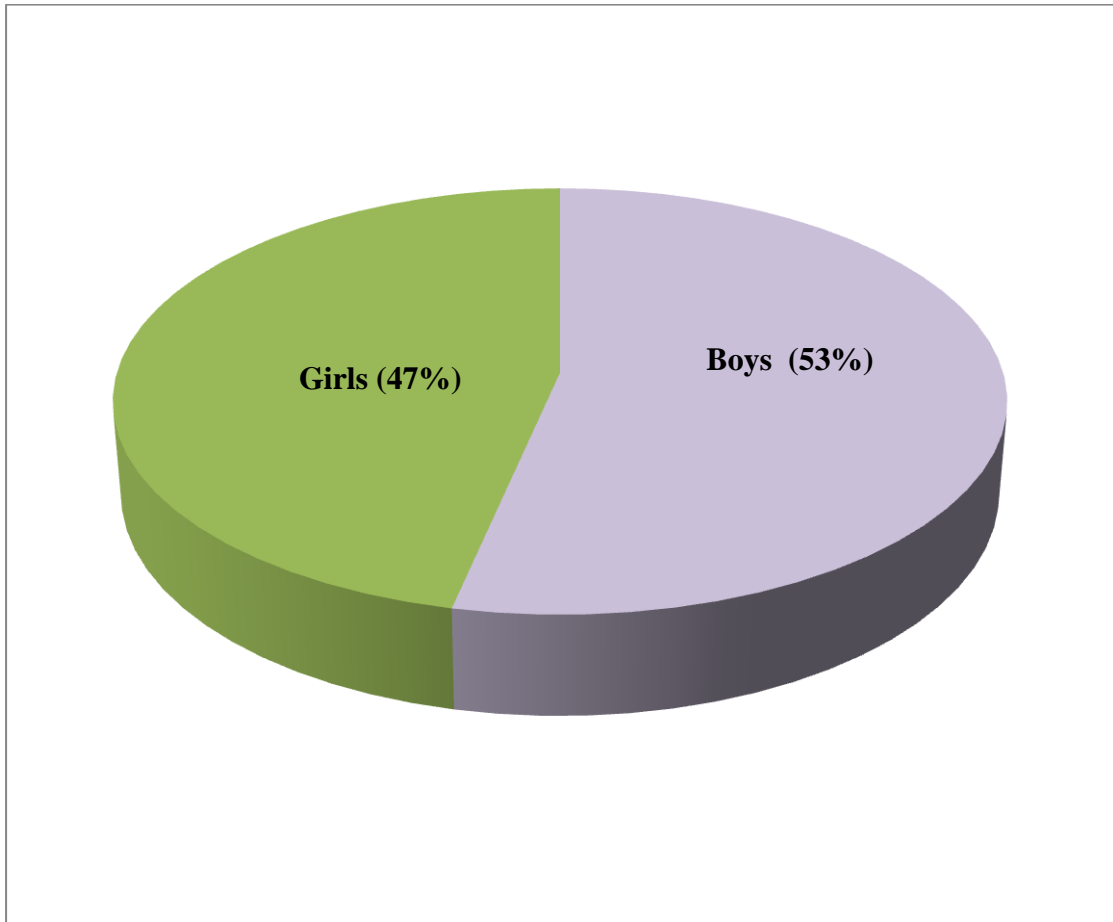


Figure 1: Sex of the participants

4.3: Educational level of the participants

The study was conducted with 116 participants. Among the participants 52.6% (n=61) were in class Eight and 47.40% (n=55) which were studying in class Seven.

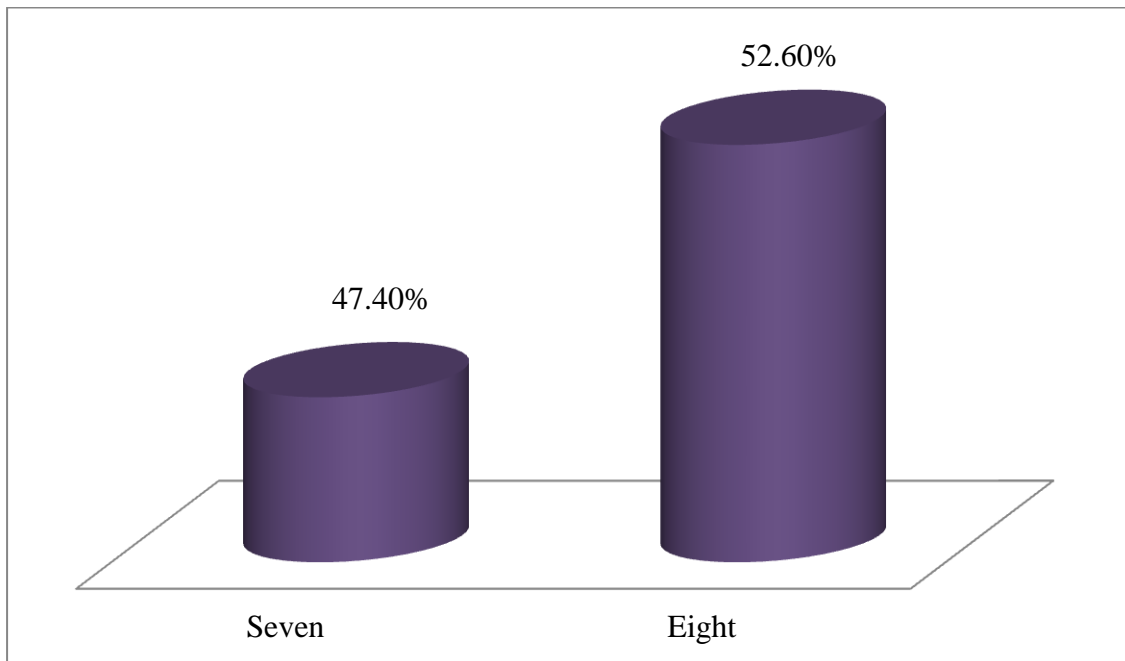


Figure 2: Educational level of the participants

4.4: Types of bag

Among the 116 participants, 81.9% (n=95) participants use backpack and 18.1% where (n=21) participants use Gym Back/Duffle Bag.

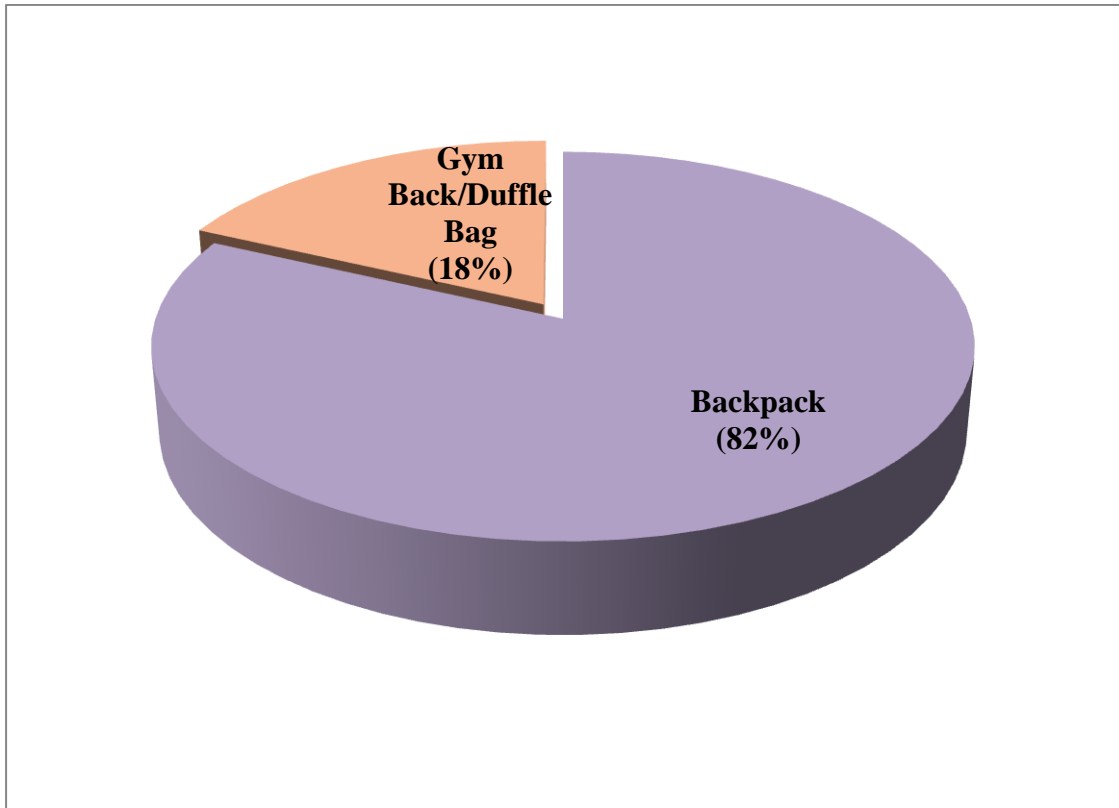


Figure 3: Types of bag carried by the participants

4.5: Method of backpack carriage

The diagram shows that among the 116 participants, 82.80% (n=96) participants carried over both shoulder, 4.3% (n=5) in front using both hands, 7.8% (n=9) carried over the right shoulder, 4.3% (n=5) carried over the left shoulder and 0.9% (n=1) carried in the left hand.

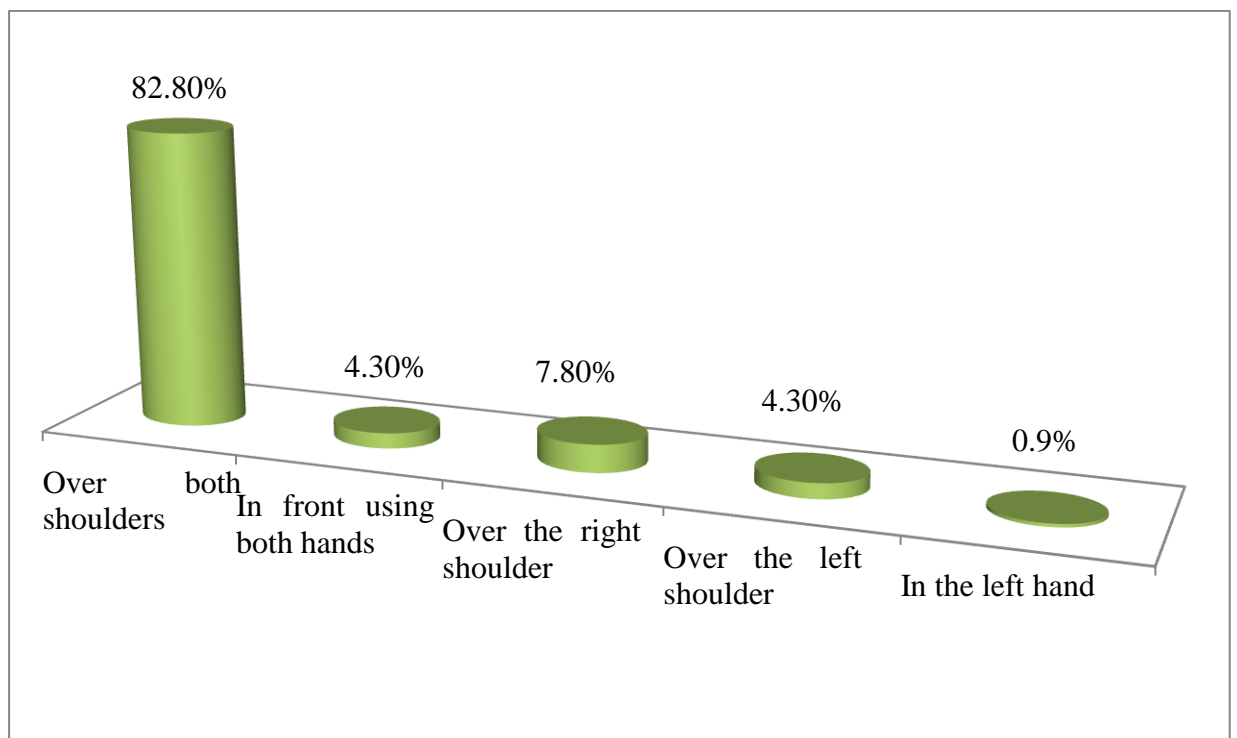


Figure 4: Method of backpack carriage

4.6: The weight of the backpacks

Among 116 participants, 61.2% (n=71) participants carried 4-6 kg of backpack and 38.2% (n=45) of participants carried 7-8 kg of weight.

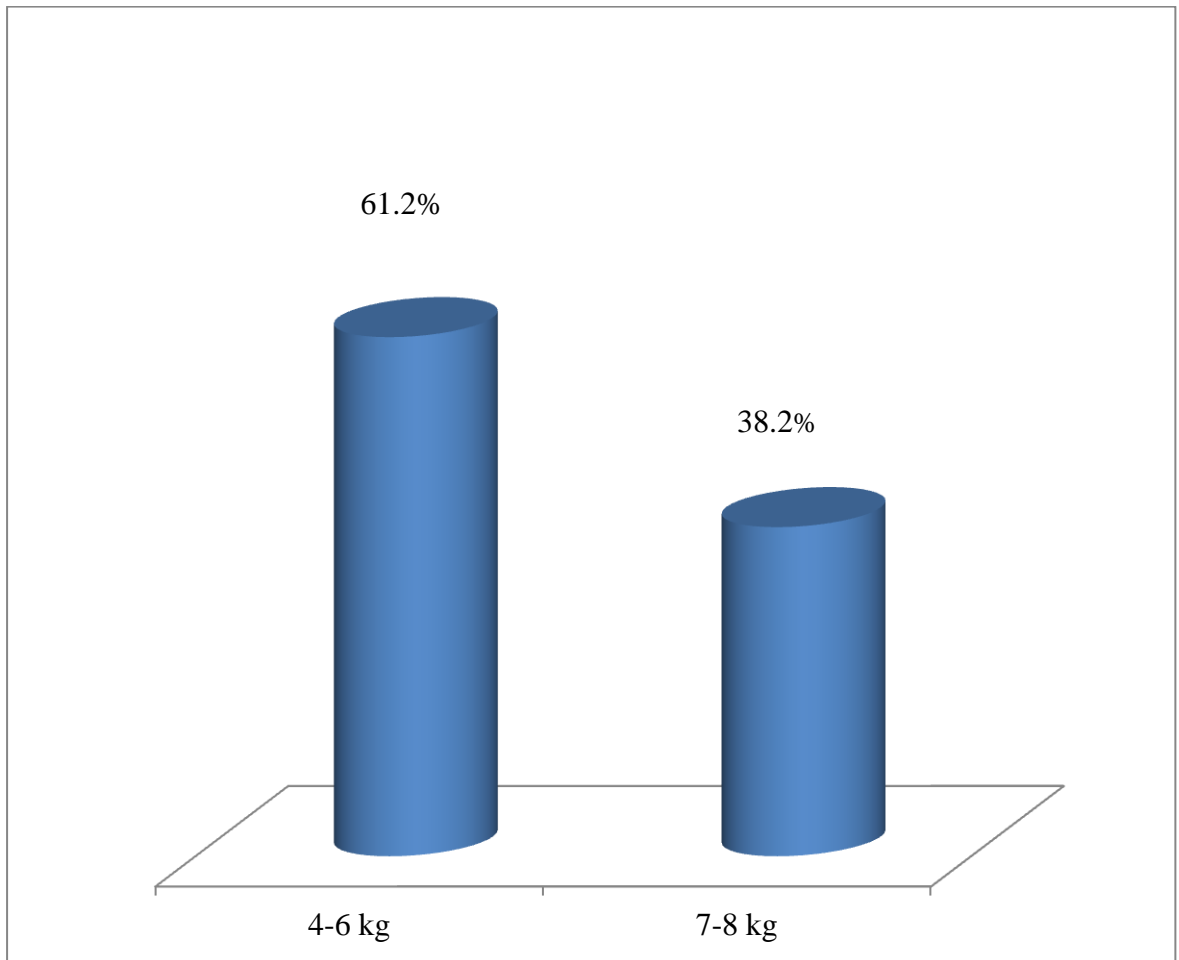


Figure 5: The weight of the backpacks

4.7: Participants backpack's weight is compared with 10% of body weight

The bar diagram shows among the 116 participants that 83.62% (n=97) of participants carried weight more than 10% of their body weight and 16.37 % (n=19) participants didn't carry more than of their body weight.

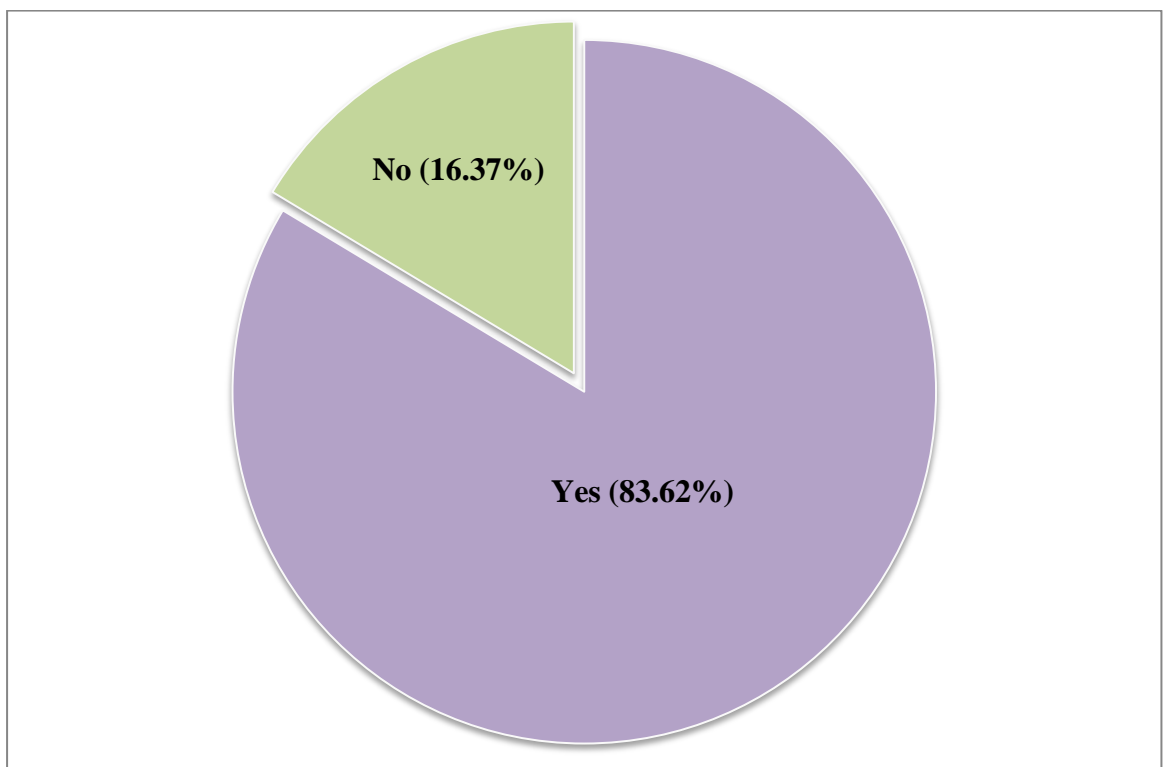


Figure 6: Backpack's weight is compared with 10% of body weight

4.8: The features of a backpack/bag for waist belt

The table shows that from 116 participants, 23.3% (n=27) don't have it, 9.5% (n=11) never used it, 26.7 % (n=31) sometimes used and rest of 40.7 % (n=47) always use waist belt.

Table 2: The features of a backpack/bag for waist belt

Features for waist belt	Number	Percentage (%)
Don't have it	27	23.3 %
Never	11	9.5 %
Sometimes	31	26.7 %
Always	47	40.5 %
Total	116	100 %

4.9: The features of a backpack/bag for chest strap

About 116 participants were involved in this study among 26.7% (n=31) don't have it, 25.9% (n=30) never used it, 32.8% (n=38) sometimes used and rest of 14.7% (n=17) always use chest strap while carrying the bag.

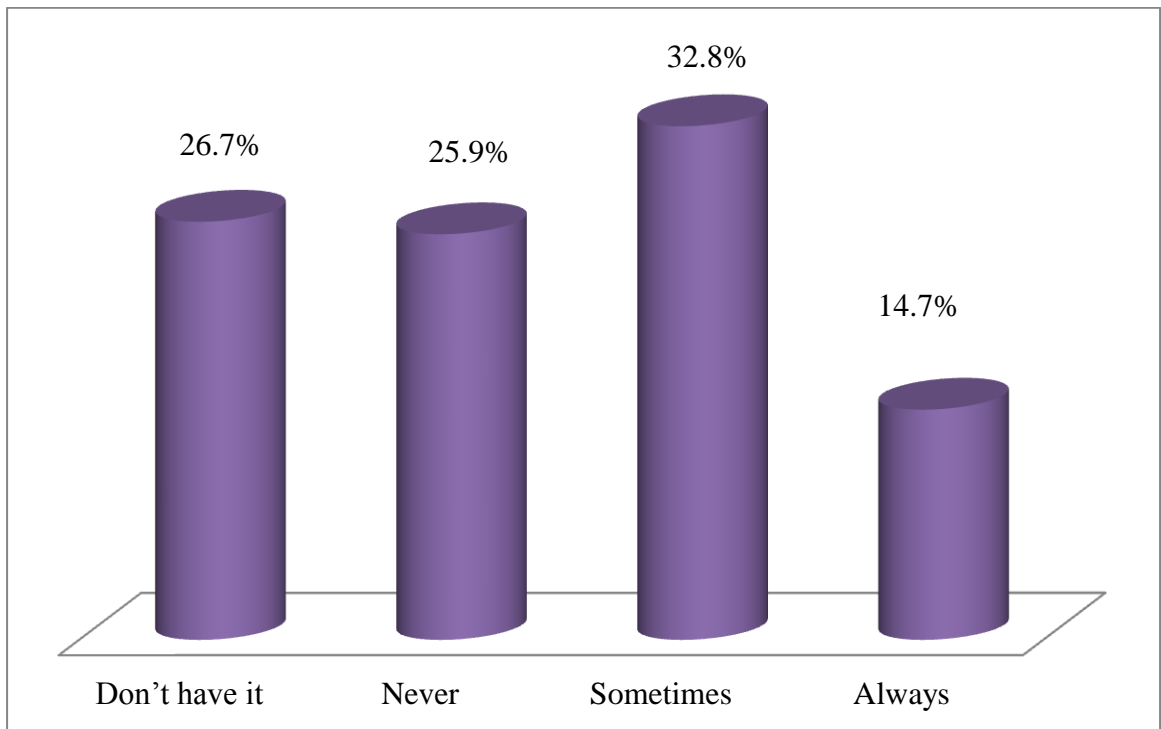


Figure 7: The features of a backpack/bag for chest strap

4.10: The features of a bag for padded shoulder strap

About 116 participants were involved in this study among 38.8% (n=47) don't have it, 6% (n=7) never used it, 4.3% (n=5) sometimes used and rest of 50.9% (n=59) always use padded shoulder strap while carrying the bag.

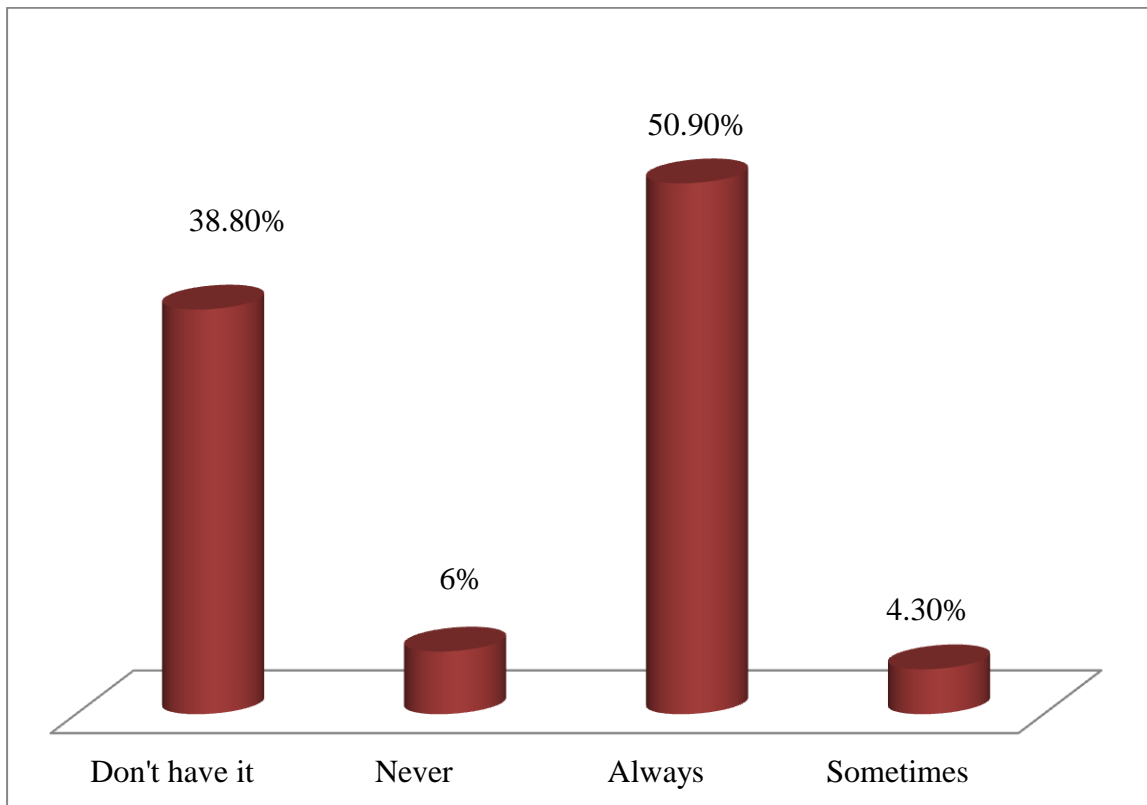


Figure 8: The features of a bag for padded shoulder strap

4.11: The features of a backpack/bag for Wheels

About 116 participants were involved in this study among 98.3% (n=114) don't have it, 0.9% (n=1) never used it, 0.9 % (n=1) sometimes used wheels.

Table 3: The features of a backpack/bag for Wheels

Features	Number	Percentage (%)
Don't have it	114	98.3 %
Never	1	0.9 %
Sometimes	1	0.9 %
Total	116	100 %

4.12: Carrying bag in a normal day

Among the 116 participants 69.8% (n=81) felt heavy their backpack, 29.3% (n=34) felt medium and 0.9% (n=1) felt light of their backpack.

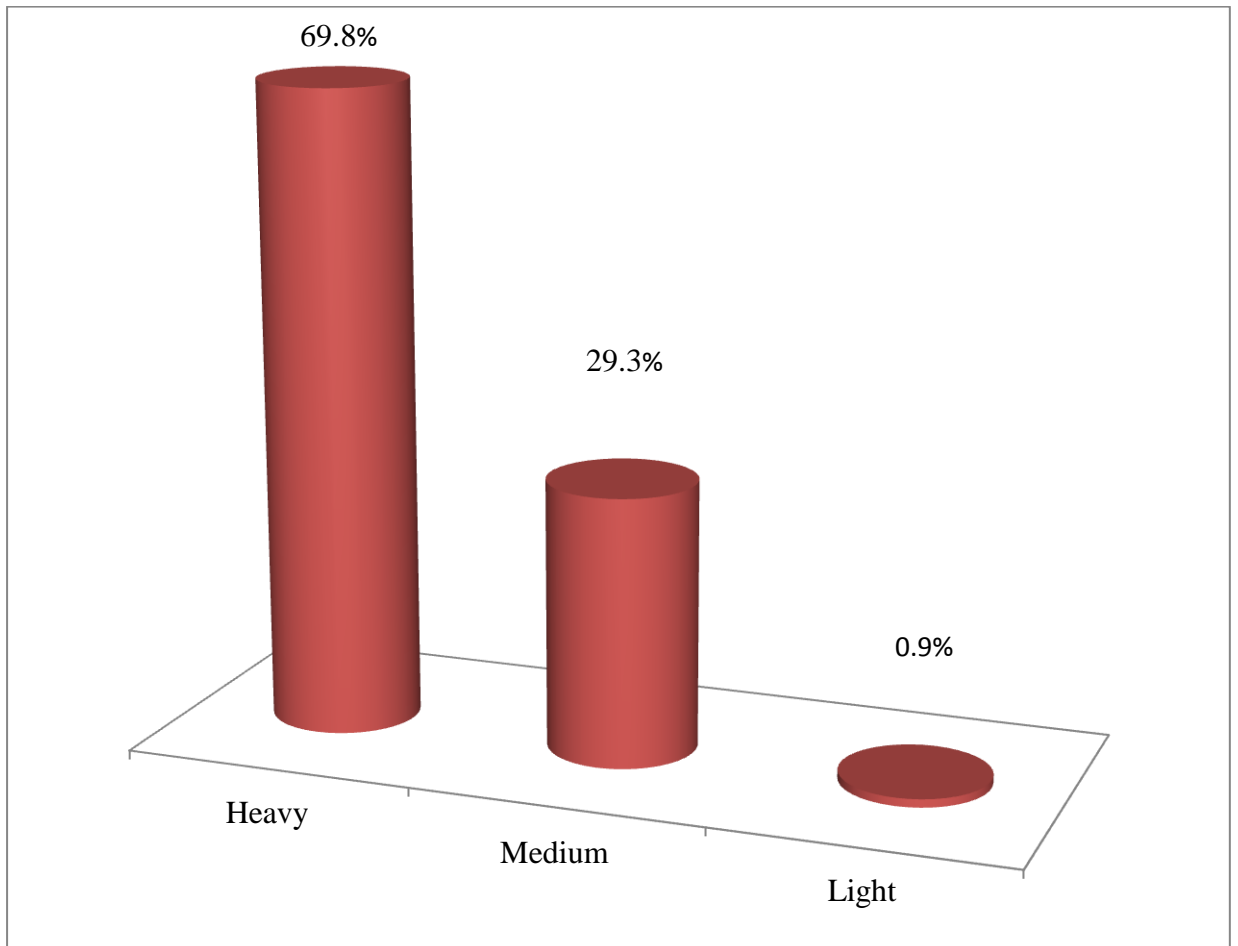


Figure 9: Carrying bag in a normal day

4.13: Feeling of tiredness during carrying their bag

Among the 116 participants 12.1% (n=14) didn't feel tired during carrying their backpack, 87.9 % (n=102) feel tired during carrying of their backpack.

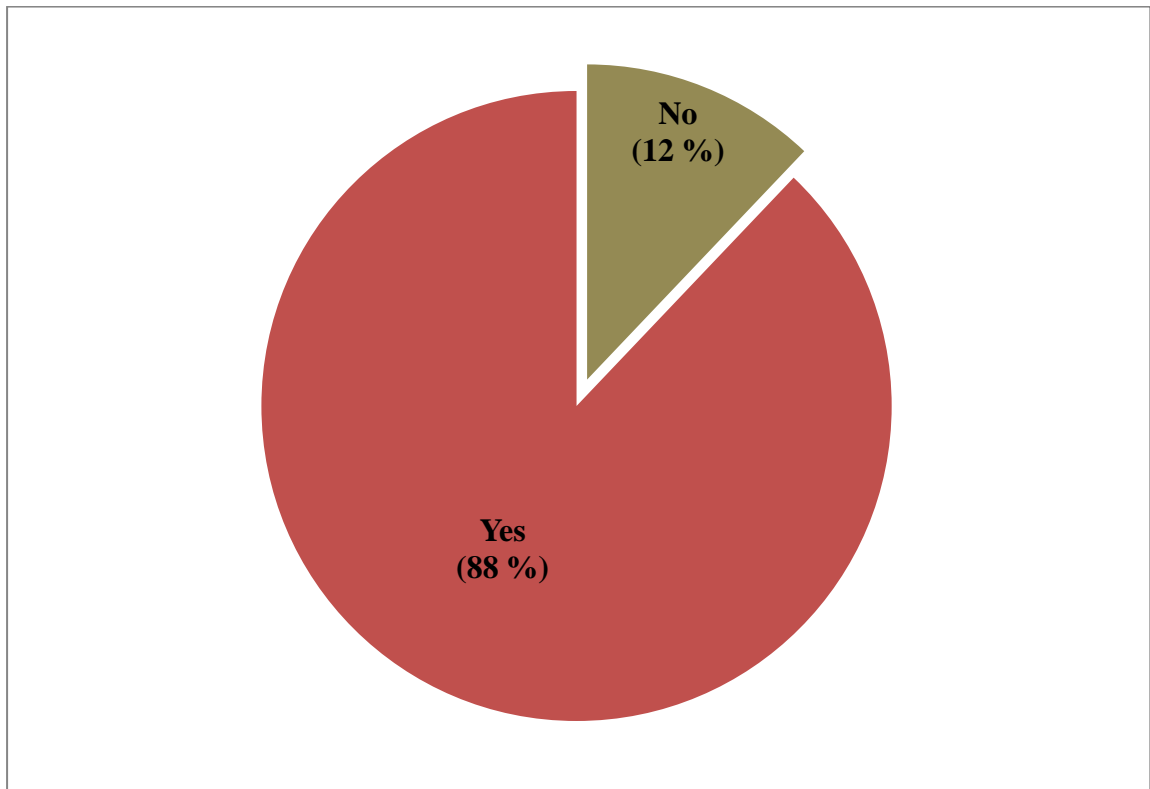


Figure 10: Feeling of tiredness during carrying their bag

4.14: Reason that carried bag in that manner

Among the 116 participants 53.4% (n=62) felt heaviness during carrying their backpack and 46.6% (n=54) felt habitual during carrying their backpack.

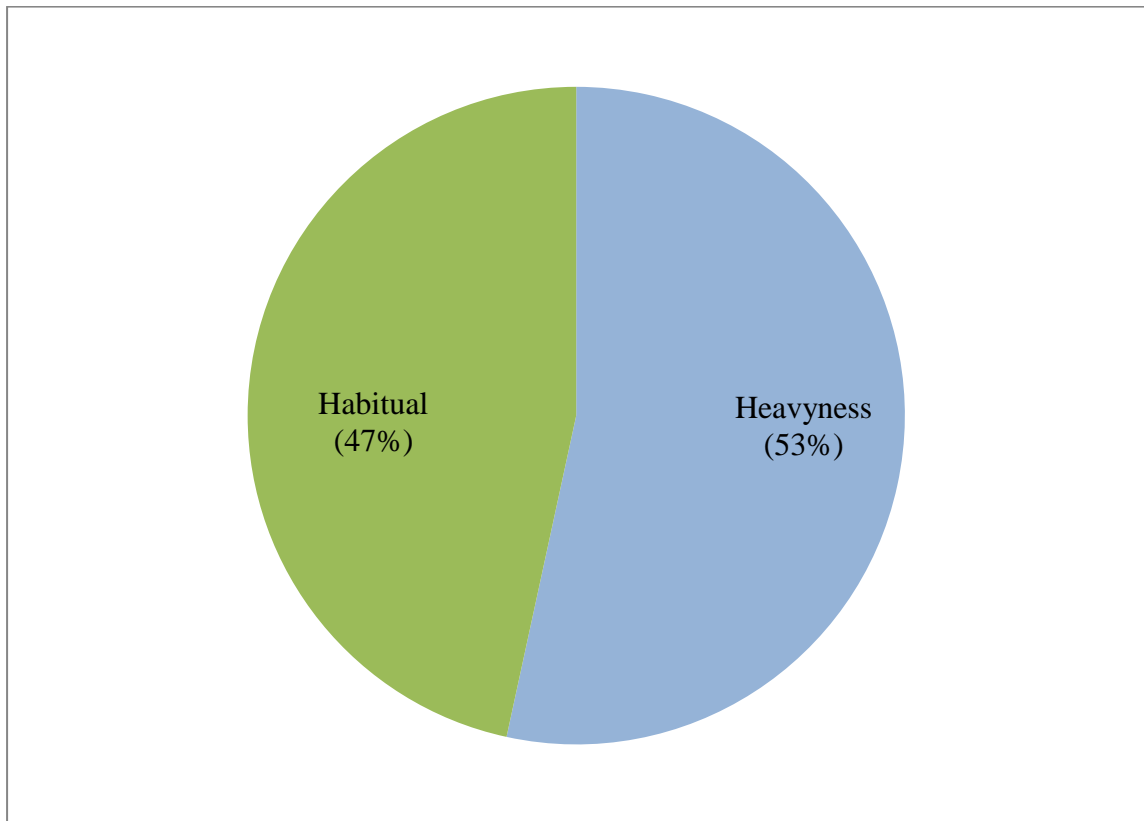


Figure 11: Reason that carried bag in that manner

4.15: Carried backpack/bag normally on the way to school

In this study, among the 116 participants 38.8% (n=45) carried their backpack less than 5 minutes, 34.5% (n=40) carried their backpack 6-10 minutes and 14.7% (n=17) carried their backpack 11-15 minutes and both 6% (n=7) carried their bag 15-24 minutes and 25 minutes or more.

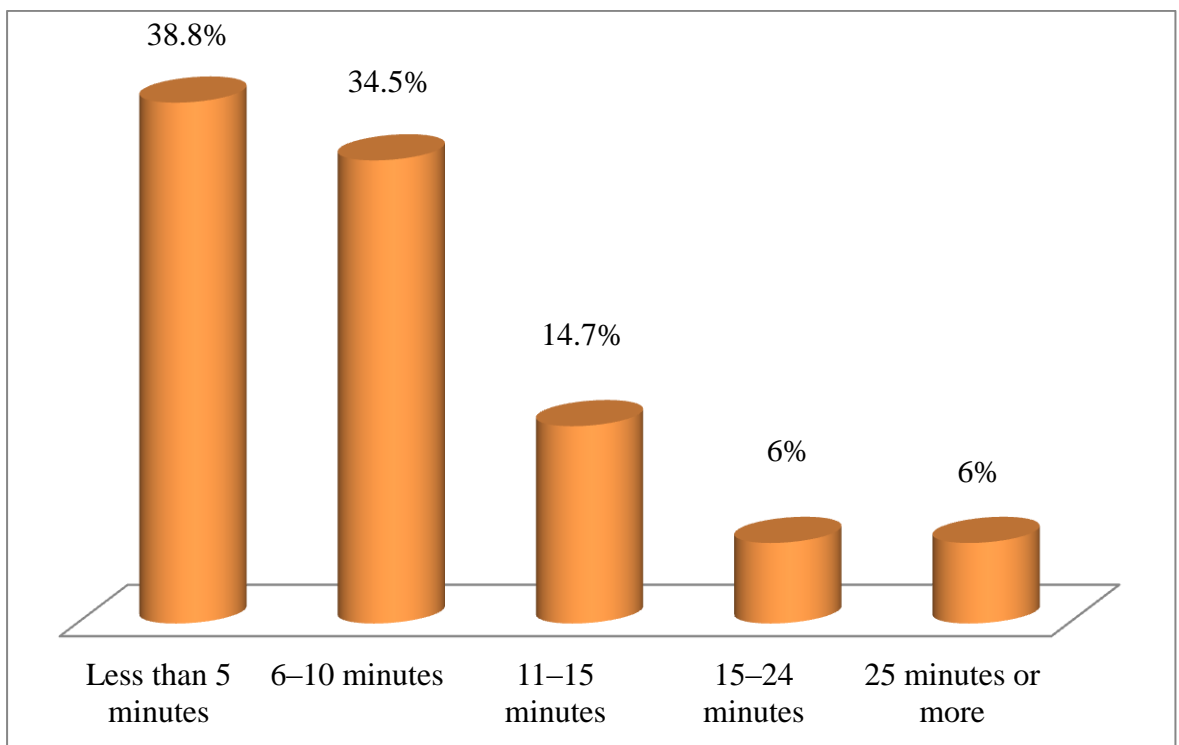


Figure 12: Carried backpack/bag normally on the way to school

4.16: Walking with your backpack/bag, would you say you stand up straight

In total 116 participants were selected in this study, 9.5% (n=11) participants said all of the times stands up straight walking with their backpack. 13.8% (n=16) participants said most of the times stands up straight walking with their backpack, 28.4% (n=33) participants said some of the times stands up straight walking with their backpack. 22.4% (n=26) participants said very little while stands up straight walking with their backpack, 25.9% (n=30) participants said stands up straight Always bent over when wearing backpack.

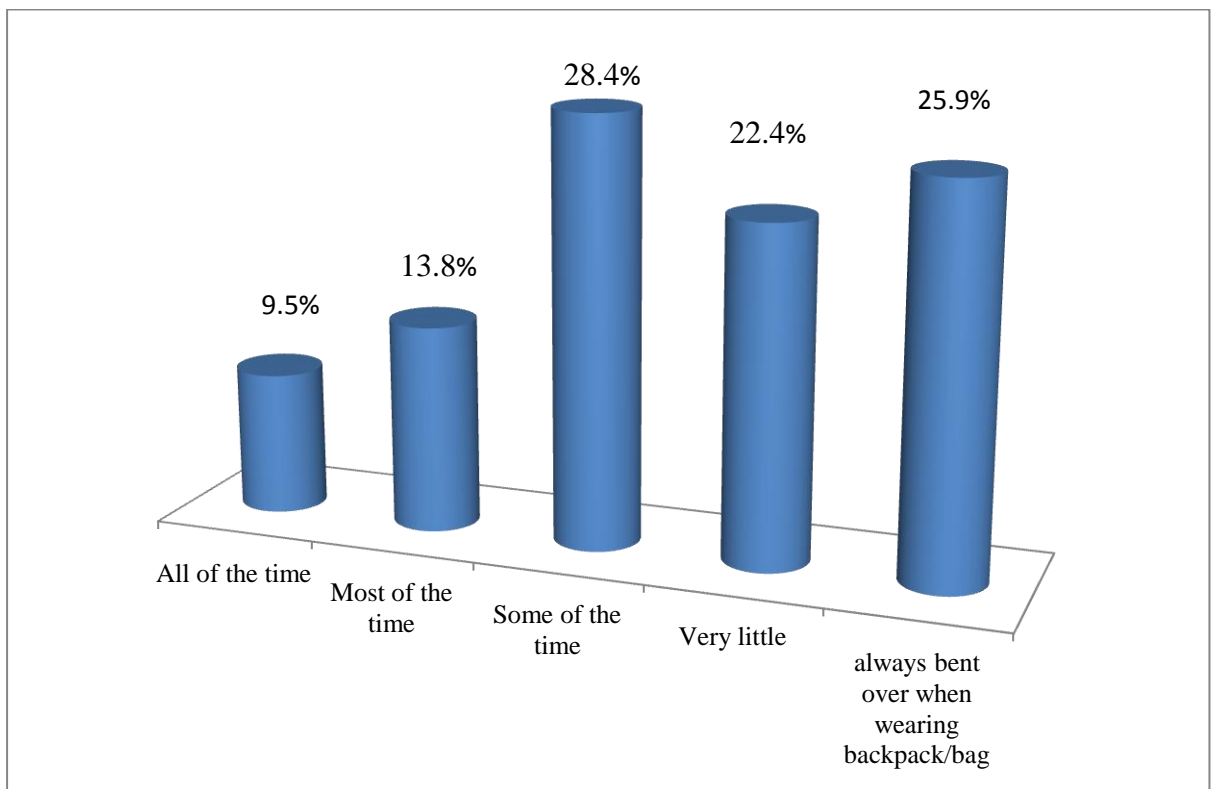


Figure 13: Walking with your backpack/bag, say you stand up straight

4.17: Walking with their backpack/bag, assumption any of the postures

In this study, between the 116 participants among 69.8% (n=81) assumed stooping while walking with their backpack, 19.8% (n=23) assumed leaning forward while walking with their backpack, 2.6 % (n=3) assumed leaning sideways while walking with their backpack and 7.8% (n=9) weren't included with this posture.

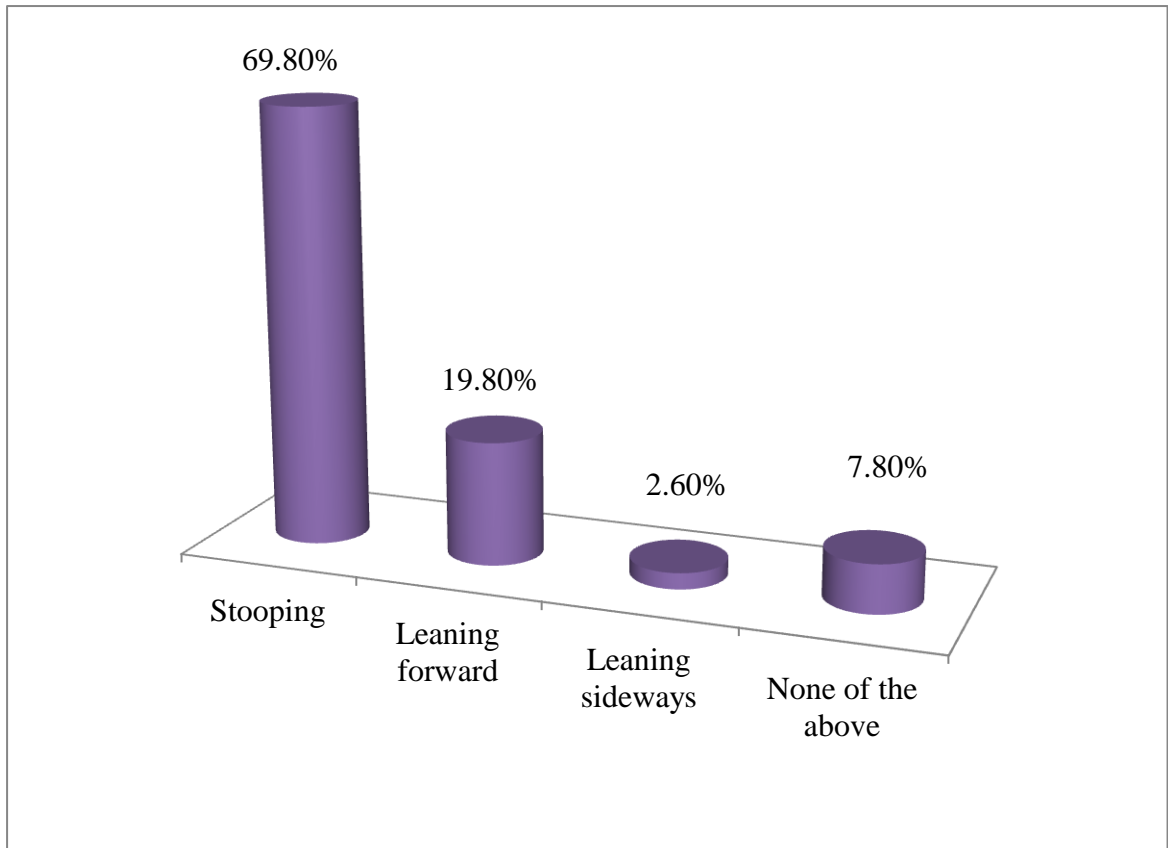


Figure 14: Walking with their backpack/bag, assumption any of the postures

4.18: Because of carrying backpack, musculoskeletal discomfort

116 participants were conducted in this study, among this 4.3% (n=5) were suffering from muscle soreness, 19.8% (n=23%) were suffering from upper back pain. 9.5% (n=11) were suffering from lower back pain and 7.8% (n=9) were suffering from leg pain, 37.1% (n=43) suffering from neck pain, 11.2% (n=13) suffering from arm pain. 2.6% (n=3) were suffering from tingling in pain, 7.8% (n=9) did not suffer from any condition.

Table 04: Musculoskeletal discomfort due to carrying bag

Musculoskeletal discomfort	Number	Percentage (%)
Muscle soreness	5	4.3%
Upper Back Pain	23	19.8 %
Lower Back pain	11	9.5 %
Leg Pain	9	7.8 %
Neck pain	43	37.1 %
Arm Pain	13	11.2 %
Tingling in arms/legs	3	2.6 %
Other	9	7.8 %
Total	116	100 %

4.19: Distribution of respondents with bags are used most often to carry books and Methods of carrying backpack

The table showed that among 95 participants 84.2% (n=80) used to carry bags Over both shoulders, 3.1% (n=3) participants used most often to carry books by backpack in front using both hands. 6.3% (n=6) used most often to carry books by backpack using Over the right shoulder. 5.2% (n=5) participants used carry bags over the left shoulder and 1% (n=1) used most often to carry books by backpack using over the left hand and among 21 participants 76.2% (n=16) used to carry bags by Gym back over both shoulders, 9.5% (n=2) participants used most often to carry books by gym bag in front using both hands, 14.3% (n=3) used most often to carry books by backpack using over the right shoulder.

Table 5: Distribution of respondents between Bags are used most often to carry books and methods of carrying backpack

Bags are used most often to carry books	Method of Backpack Carriage					Total
	Over both shoulders	In- front using both hands	Over the right shoulder	Over the left shoulder	In the left hand	
Backpack	80(84.2%)	3(3.1%)	6(6.3%)	5(5.2%)	1(1%)	95
Gym Back/Duffle Bag	16(76.2%)	2(9.5%)	3(14.3%)	-	-	21
Total	96	5	9	5	1	116

Association between Bags are used most often to carry books and methods of carrying backpack

Table-6: Association between Bags are used most often to carry books and methods of carrying backpack

Bags are used most often to carry books and methods of carrying backpack	Chi-Square	P-value
	14.604	0.006

This observed Chi-square value 14.604 was and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was association between bags are used most often to carry books and methods of carrying backpack.

4.20: Distribution of respondents with Weight of the participants and backpacks weight more than ten percent of body weight

The cross tabulations shows that, from 116 participants among them 19 participants didn't carry more than 10 % of their body weight, for 25-35 kg weight of the participants 0% didn't carry more than 10 % of their body weight. For 36-45 kg 15.7% (n=3), for 46-60 kg 47.4% (n=9), and more than 60 kg weight of participants 36.8% (n=7) did not carry more than 10% of their body weight. Among the 97 participants carried more than 10% of their body weight, for 25-35 kg weight of the participants 9.2% (n=9) carried more than 10% of their body weight. For 36-45 kg 44.3% (n=43), for 46-60 kg 43.2% (n=42), and more than 60 kg weight of participants 3.1 % (n=3) carried more than 10 % of their body weight.

Table 7: Distribution of respondents with Weight of the participants and backpacks weight more than ten percent of body weight:

Weight of the participants	Backpacks weight more than ten percent of body weight		Total
	No	Yes	
25-35 kg	-	9 (9.2%)	9 (7%)
36-45 kg	3 (15.7%)	43 (44.3%)	46 (39%)
46-60 kg	9 (47.4%)	42 (43.2%)	51 (43%)
more than 60 kg	7 (36.8%)	3 (3.1%)	10 (8%)
Total	19 (100%)	97 (100%)	116 (100%)

Association between weight of the participants & backpacks weight more than ten percent of body weight

Table 8: Association between weight of the participants & backpacks weight more than ten percent of body weight

Weight of the participants & backpacks weight more than ten percent of body weight	Chi-Square	P-value
	26.078	0.000

This observed Chi-square value was 26.078 and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was strong association weight of the participants & backpacks weight more than ten percent of body weight.

4.21: Distribution of respondents with bags are used most often to carry books and The features of a backpack/bag for padded shoulder strap

The study was conducted by 116 participants among them 30.5% (n=29) don't have padded shoulder strap carry books by backpacks. 5.26% (n=5) never used padded shoulder strap, 5.26% (n=5) sometimes used padded shoulder strap and about 58.9 % (n=56) participants had always use padded shoulder strap carry books by backpacks.

On the other circumstances, 116 participants among them 76.2% (n=16) don't have padded shoulder strap carry books by Gym bag/Duffle bag and 9.5% (n=2) never used padded shoulder strap and about 14.3 % (n=3) participants had always use padded shoulder strap carry books by Gym back/ Duffle bag.

Table-9: Distribution of respondents with Bags are used most often to carry books and the features of a backpack/bag for padded shoulder strap

The features of a backpack/bag for padded shoulder strap					
Bags are used	Don't have it	Never	Sometimes	Always	Total
Backpack	29 (30.5%)	5(5.2%)	5(5.2%)	56(58.9%)	95
Gym Back/Duffle Bag	16(76.2%)	2(9.5%)	-	3(14.3%)	21
Total	45	7	5	59	116

4.22: Association between Bags are used most often to carry books and the features of a backpack/bag for padded shoulder strap

Table-10: Association between Bags are used most often to carry books and the features of a backpack/bag for padded shoulder strap

Bags are used most often to carry books Vs the features of a backpack/bag for padded shoulder strap	Chi-Square	P-value
	17.712	0.001

This observed Chi-square value was 17.712 and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was strong association between Bags are used most often to carry books and the features of a backpack/bag for padded shoulder strap.

4.22: Distribution of respondents with Methods of backpack carriage and reason that the backpack is carried in the same manner

The table showed that among 62 participants, because of heaviness of backpack 95.2% (n=59) carried over both shoulders, 1.6% (n=1) carried in front using both hands, 1.6% (n=1) carried over the right and left shoulder. Among 54 participants because of habitual reason backpack 68.5% (n=37) carried over both shoulders, 7.4% (n=4) carried in front using both hands, 14.8% (n=8) carried over the right and left shoulder 7.4% (n=4) rest of 1.9 % (n=1) participants carried by using left hand.

Table 11: Distribution of respondents between Methods of backpack carriage and Reason that the backpack is carried in the same manner

Method of backpack carriage	Reason that the backpack is carried in the manner		Total
	Heaviness	Habitual	
Over both shoulders	59 (95.2%)	37 (68.5%)	96
In front using both hands	1 (1.6%)	4 (7.4%)	5
Over the right shoulder	1 (1.6%)	8 (14.8%)	9
Over the left shoulder	1 (1.6%)	4 (7.4%)	5
In the left hand	-	1 (1.9%)	1
Total	62	54	116

Association between Methods of backpack carriage and Reason that the backpack is carried in the same manner

Table-12: Association between Methods of backpack carriage and Reason that the backpack is carried in the same manner

Methods of backpack carriage and Reason that the backpack is carried in the same manner	Chi-Square	P-value
	14.604	0.006

This observed Chi-square value was 14.604 and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was strong association between methods of backpack carriage and Reason that the backpack is carried in the same manner.

4.23: Distribution of respondents with Feeling of pain now that you believe is due to wearing your backpack/bag Vs The areas that where the pain is located

The cross tabulation showed that among the 166 participants 56 (48.3%) participants felt no pain at that time among them there were no Back pain, Neck pain was 1 (5.26%), Shoulder or arm pain 2 (5.9%). Rest of the participants felt pain several areas and the location of the pain areas were 60 (51.7%) participants- back pain was 9 (100%), Neck pain were 18 (94.7%) and the Shoulder pain were 32 (94.1%).

Table 13: Distribution of respondents with between feeling of pain now that you believe is due to wearing your backpack/bag and The areas that where the pain is located

Feeling of pain now that you believe is due to wearing your backpack/bag	The areas that where the pain is located				Total
	Backpain	Neck pain	Shoulder or arm pain	No pain	
No	-	1(5.26%)	2(5.9%)	53(98.1%)	56(48.3%)
Yes	9(100%)	18(94.7%)	32(94.1%)	1(1.9%)	60(51.7%)
Total	9	19	34	54	116

Association between feeling of pain now that you believe is due to wearing your backpack/bag and the areas that where the pain is located

Table-14: Association between Feeling of pain now that you believe is due to wearing your backpack/bag and the areas that where the pain is located

Feeling of pain now that you believe is due to wearing your backpack/bag and The areas that where the pain is located	Chi-Square	P-value
	100.737	0.000

This observed Chi-square value was 100.737 and 5% level of significant state chi-square was 1.96 which is less than the observed chi-square value. That means Null-hypothesis was neglected and alternative hypothesis was accepted. So the result was significant that indicate there was strong association between Feeling of pain now that you believe is due to wearing your backpack/bag and The areas that where the pain is located.

The objectives of the study was to find out the musculoskeletal discomfort due to carrying school bag and approximate weight should carry by the school going children of two specific school and included the participants age, weight, sex, characteristic of bag, ten percent of body weight etc. There were no significant differences in all the demographic all data, which included gender, age, and weight. The present study also found a significant association of pain outcomes with grade (a reflection of age), school district, and gender in which an another study also found this in a Poland study in 2014.

The finding of greater reports of pain in females as compared to males is consistent with other literature Lasota (2014) and (Hong et al., 2005) While Negrini and Carabalona (2008) found no statistical differences between genders, van Gent et al. (2006) reported significantly greater neck, shoulder and back complaints in girls than in boys. The variable stages of development at one grade could explain the difference in responses between males and females when adjusted for age.

In my study, boys were 53.4% where n=62 and girls were 46.6% where n=54 in which another study relatively showed that 55% of respondents were females and 45% were male (Sharan et al., 2012).

In this study the prevalence of upper back pain was 19.8% (n= 23), neck pain was 37.1% (n=43), shoulder/ are pain was 11.2% (n=13) and low back pain was 9.5 % (n=11). Approximately similar findings has been reported in the study of Deepak et al. (2012) that upper back pain was 40%, neck pain was 27%, shoulder and arm pain 27% and the low back pain was 6%. Another study found that on this basis, rate of discomfort in shoulders area 38.1 %, in neck 27.6 % and in back 16.7 % has been reported. It must also be acknowledged that the outcomes in this study reflect subjective responses that are cross sectional. Perceptions are not objective and responses. Another study showed that low back pain (LBP) was most frequently reported 33.2% followed by muscle soreness 24.4%, neck pain 23.5%, upper back

pain 10.5%, and arm pain 5.8%, tingling 4%, and leg pain 3.6%. When asked if the subject sought treatment from a doctor, therapist or other medical personnel for the pain associated with the backpack wear, only 3.3% of the individuals reported that they had received such treatment (Talbot et al., 2009). In this study no one had taken the treatment.

In my study analysis show that 87% of adolescents reported carrying their bag over both shoulders, consistent with recent findings of other study was 85% (Haselgrove et al., 2008). Research conducted in the 1980s generally found carrying a school bag over one shoulder was most common amongst adolescents. In my study revealed that 13% of the participants carried their bag in one shoulder or in one arm. This change in preferred carrying method may be due to a combination of education, changing fashion trends, and the design of more comfortable two strap backpacks.

According to the findings of this study, the school backpack weights of participants were widely different. Furthermore, their weights varied across the school week. The lightest schoolbag in Class 7 and class 8 was 3 kg and heaviest was almost 8 kg on the other study revealed that was for grade 1 students 1.5 kg and the heaviest was 5.5 kg; in Grade 2 1.5 kg and 7.0 kg; in Grade 3 the lightest was 1.5 kg and the heaviest was 6.2 kg (Lasota, 2012).

This study showed that high daily duration of carriage is associated with musculoskeletal discomfort. Previously it has been thought that high levels of spinal loading, such as that induced by prolonged bag carriage, increase the risk of spinal pain. Indeed, research has shown that high daily duration of carriage is associated with back pain in adolescents (Chiang et al., 2006).

In this study, 13% participants carried backpacks with a strap on one shoulder and no one used backpacks with wheels. Another study showed 8% carried backpacks with a strap on one shoulder and 4% used backpacks with wheels among 116 participants aged 12 to 15 years and found 87% preferred to carry their backpacks by using two straps. 13% by one strap, which is similar to a study, conducted Skaggs et al. (2008) evaluated 1,540 adolescents aged 11 to 14 years and found 81% preferred to carry

their backpacks by using two straps, and 14% by one strap. Pascoe et al. (2003) found that the form of transport most used by students 73.1% was with a strap supported on one shoulder.

The study showed that 69.80% (n=81) stooping, 19.80% where (n=23) leaning forward 2.60% (n=3) leaning sideways while they carried their backpack. In describing their perception of their posture, another study showed that a stooped or forward leaning posture while carrying the backpack was identified by 68.2% of the respondents, 2.9% indicated they leaned to the side only. 3.5% indicated they stooped/leaned forward as well as leaned to the side (combination of forward and lateral flexion), 25.3% reported they always stood up straight among the 871 participants (Talbot et al., 2009).

Posture while carrying a backpack was also a significant factor in many of the logistic regression models for pain outcomes. A study by Wojewodzka et al. (2011) found significant associations between a flexed sitting posture and neck and upper back pain in schoolchildren while several laboratory studies have documented changes in posture when standing and walking while wearing a backpack (Wojewodzka et al., 2011).

In this study, 9.5% reported they stand up straight all of the times, 19.8% reported that they stand straight most of the times. 28.4% participants reported that they stand straight some of the times, 22.4% reported very little and 25.9% said that they stand always bent. Another study revealed that 26% reported they stand up straight very little or were always in a bent position, 26% reported they sometimes stand up straight and 48% of the respondents reported they stand up straight always or most of the time (Talbot et al., 2009).

The present study found that a high percentage of students 83.62% (n=97) carried an excessively heavy backpack which is greater than 10% of body weight and 16.37% (n=19) weight in co-relation with 10% of body weight. Where another study have showed (41.1%) carried an excessively heavy backpack (greater than 10% of their body weight).

The study also investigated student's subjective perceptions of their daily schoolbag loads. The majority of the pupils reported that they felt their backpack heavy 69.8% (n=81), 29.3% (n=34) reported that they felt medium and 0.9% (n=1) felt lighter. Another study revealed that the majority of the pupils reported that they felt their bags were either medium 49.9% or heavy 39.8% (Mwaka et al., 2014).

In this study, among the 116 participants 47.5% (n=55) used chest strap while carrying their bag, 67.2% (n=78) used waist belt and 55.2% (n=64) used padded shoulder strap while carrying their bag. Another study showed that chest straps to 29% of the backpacks users, padded shoulder straps were also common as they were found in 88% of the backpack, waist belt was common to 46% of the respondents (Talbot et al., 2009).

This was done within a short period of time; it should take more time to conduct this study. A limitation of this study was that the schoolbag weight was recorded only during 1 day. Consequently, the recorded data cannot account for the variance of schoolbag weight during a whole week. This study cannot be generalized to the whole population as the sample size was very small and findings need to be confirmed with larger studies.

6.1 Conclusion

The findings of the present study provide additional information about the use of school bags and musculoskeletal symptoms among school children. The results indicated that the prevalence of musculoskeletal complaints among schoolchildren was considerably high. This suggests the need for preventive measures and appropriate guidelines with regard to safe load carriage in schoolchildren to protect this age group. The majority of pupils have musculoskeletal pain especially in the neck shoulders and lower back.

Pupils carry heavy schoolbags with a significant proportion of them carrying school bags of more than 10% of their body weight. School children, schools and families are equally involved in determining the weight of schoolbags, and all could contribute to reducing it.

The aim of this study was to investigate the weight of schoolbags of primary school pupils to determine how many of them carry backpacks that weight in excess of the recommended limit (10% BW) and musculoskeletal discomfort. This study revealed that 116 participants were conducted in this study, among this 4.3% (n=5) were suffering from muscle soreness, 19.8% (n=23) were suffering from upper back pain. 9.5% (n=11) were suffering from lower back pain. 7.8% (n=9) were suffering from leg pain. 37.1% (n=43) suffering from neck pain, 11.2% (n=13) suffering from arm pain. 2.6% (n=13) were suffering from tingling in pain. A point also noticeable that a high number of students had adopted incorrect postures when sitting, standing, carrying the backpack.

6.2 Recommendation

The aim of this study was to investigate the weight of schoolbags of primary school pupils to determine how many of them carry backpacks that weight in excess of the recommended limit and musculoskeletal discomfort.

The back of the pack should be padded to prevent being poked by sharp objects that may be in the backpack. The backpack should be of right size for the child and should be worn properly. Both shoulder straps should be worn, only wearing it on one shoulder puts excess strain on the upper back. The backpack should not extend below the lower back. The weight should be properly distributed by putting the heavier items on the bottom and against the back to keep the weight off of your shoulders and to maintain neutral posture. Backpack should be taken off while standing for a long period of time. Extended carrying time increases the pressure on the spine. Further research would be between large groups of children covering most of the area of Bangladesh.

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Consent Form

Assalamualaikum / Namasker,

I am Tithi Anthonia Corraya, 4th year student of B.Sc in Physiotherapy at Bangladesh Health Profession Institute. I am conducting a dissertation and the title is-**“The School bag’s weight influence on the physical status of school going children”** which is included in my course. That's why I would like to know the answers of some questions about the impact of the weight of the school bag on your physical status, which takes about 20-25 minutes. It also ensures that the information you provide will be kept confidential.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you do not like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with me and/or my Supervisor Md. Shofiqul Islam, Assistant Professor, Physiotherapy Department, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before starting the dissertation?

Can I start this interview with your permission?

Yes

No

Signature of the Participant and date _____

Signature of the Interviewer and date _____

Witness signature and date _____

সম্মতিপত্র

আসসালামুয়ালাইকুম/ নমস্কার,

আমি তিথি আস্থনীয়া কোড়াইয়া, আমি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটের ফিজিওথেরাপি বিভাগে বিএসসি.'র চতুর্থ বর্ষের ছাত্রী। আমি একটি গবেষণামূলক প্রকল্প পরিচালনা করছি এবং যার শিরোনাম-“ স্কুল বয়সে শিক্ষার্থীদের শারীরিক অবস্থার উপর স্কুল ব্যাগের ওজন প্রভাব” যা আমার কোর্সে অন্তর্ভুক্ত করা হয়। এই জন্য আমি আপনার নিকট থেকে স্কুল ব্যাগের ওজন শারীরিক গঠনে কি প্রভাব পড়ে সেই বিষয়ে কিছু প্রশ্নের উত্তর জানতে চাই, যা করতে ২০-২৫ মিনিট লাগবে। এটি নিশ্চিত করে যে আপনার দেওয়া তথ্য গোপন রাখা হবে।

এই অধ্যয়নে আপনার অংশগ্রহণ স্বেচ্ছাপ্রণোদিত এবং আপনি যেকোন সময় এই অধ্যয়ন থেকে কোন নেতিবাচক ফলাফল ছাড়াই নিজে থেকে প্রত্যাহার করতে পারবেন। এছাড়াও কোন নির্দিষ্ট প্রশ্ন অপছন্দ হলে উত্তর না দেয়ার এবং সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকারও আপনার আছে।

এই অধ্যয়নে অংশগ্রহণকারী হিসেবে যদি আপনার কোন প্রশ্ন থাকে তাহলে আপনি আমাকে অথবা/এবং আমার সুপারভাইজার মো. সফিকুল ইসলাম, সহকারী অধ্যাপক, ফিজিওথেরাপী বিভাগ, বিএইচপিআই, সিআরপি, সাভার, ঢাকা-তে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে কি আপনার কোন প্রশ্ন আছে?

.....

সুতরাং আমি আপনার অনুমতিতে এই সাক্ষাৎকার শুরু করতে পারি ?

হ্যাঁ না

১। অংশগ্রহণকারীর স্বাক্ষর ও তারিখ _____

২। উপাত্ত সংগ্রহকারীর স্বাক্ষর ও তারিখ _____

৩। গবেষকের স্বাক্ষর ও তারিখ _____

**Title: The school bag's weight influence on the physical
status of school going children**

Questionnaire

1: Socio-demographic information

1.1 Identification number:

1.2 Age:

1.3 Sex:

A. Boy.

B. Girl.

1.4 Class:

1.5 Weight :

2. Backpacks characteristic's:

2.1 What type of bag is used most often to carry books and classroom supplies to and from school?

1. Backpack
2. Gym Back/Duffle Bag
3. Other type bag
4. No bag used, books carried in arms

2.2. How often are the features of a backpack/bag used-

	1	2	3	4
Backpack characteristic's:	Don't have it,	Never	Sometimes	Always
a. Waist Belt-				
b. Chest Strap				
c. Wheels				
d.Padded Shoulder Straps				

3. Backpack Weight:

3.1 Backpack Weight:

3.2 The weight of the bag on a normal school day-

1. Heavy
2. Medium
3. Light

4: Backpack carry time:

4.1 How long you carried backpack/bag normally on the way to school ? Do not include time sitting on the bus.

1. Less than 5 minutes
2. 6–10 minutes
3. 11–15 minutes
4. 15–24 minutes
5. 25 minutes or more.

4.2 How long you carried backpack/bag normally on the way home from school ? Do not include time sitting on the bus-

1. Less than 5 minutes
2. 6–10 minutes
3. 11–15 minutes
4. 15–24 minutes
5. 25 minutes or more.

4.3 Do you have to climbing upstairs and down?

1. No
2. Yes

5. Method of Backpack Carriage:

5.1: Method of Backpack Carriage:

1. Over both shoulders
2. In front using both hands
3. Over the right shoulder
4. Over the left shoulder
5. In the right hand
6. In the left hand
7. Rolled

5.2: list any reason that the backpack is carried in the manner chosen in the above question:

6: Posture:

6.1 When walking with your backpack/bag, would you say you stand up straight?

1. All of the time
2. Most of the time
3. Some of the time
4. Very little
5. Always bent over when wearing backpack/bag

6.2 When walking with your backpack/bag, do you assume any of the given postures-

1. Stooping
2. Leaning forward
3. Leaning sideways
4. None of the above

7. Pain and related symptoms:

7.1 Do you have any pain now that you believe is due to wearing your backpack/bag?

1. No
2. Yes

7.2 If yes, list the areas that where the pain is located –

7.3 As a result of your backpack/bag, have you noticed any of the given -

1. Muscle soreness
2. Upper Back Pain
3. Lower Back pain
4. Leg Pain
5. Neck pain
6. Arm Pain
7. Tingling in arms/legs
8. Others

7.4 If you checked any of the above, have you seen a health professional (doctor, nurse, trainer, therapist) regarding the condition-

1. No
2. Yes

স্কুল জীবনে শিক্ষার্থীদের শারীরিক গঠনে স্কুল ব্যাগের প্রভাব

প্রশ্নাবলী

১ ব্যক্তি গত পরিচিতিঃ

১.১ নাম:

১.২ কোড নং :

১.৩ বয়স:

১.৪ লিঙ্গ:

১ ছেলে

২ মেয়ে

১.৫ শ্রেণী:

১.৬ ওজন-

২. ব্যাক প্যাকের বৈশিষ্ট্যবলীঃ

২.১ স্কুলে বই এবং শ্রেণী কক্ষে সরবরাহ বহন করতে সবচেয়ে বেশি ব্যবহৃত কি ধরনের ব্যাগ ব্যবহার করা হয়?

১. ব্যাকপ্যাক

২. জিমব্যাগ / দুফল্ডে ব্যাগ

৩. অন্য ধরনের ব্যাগ

৪. কোন ব্যাগ ব্যবহৃত হয় না, বই হস্ত বাহিত

২.২. একটি ব্যাকপ্যাক / ব্যাগ ব্যবহারের বৈশিষ্ট্য প্রায়ই কেমন-

	১	২	৩	৪
ব্যাগের বৈশিষ্ট্য	এটা নাই	কখনও না	কখনও কখনও	সবসময়
ক.কোমর বেল্ট				
খ.চেস্ট স্ট্র্যাপ				
গ.হুইল				
ঘ.আধুনিক কাঁধ স্ট্র্যাপ				

৩ ব্যাক প্যাকের ওজনঃ

৩.১ ব্যাগ এর ওজন

৩.২ একটি সাধারণ স্কুলের দিনে ব্যাগ এর ওজন সাধারণত কেমন অনুভূত হয়-

১. ভারী

২. মধ্যম

৩. হালকা

৪.১ ছাত্রছাত্রীদের সাধারণত বাড়ি থেকে স্কুলে যাওয়ার পথে ব্যাগ কতক্ষণ বহন করা লাগে? বাসে, রিক্সার বা অন্য কোন যান বাহনে বসার সময় অন্তর্ভুক্ত না করে-

১. ৫ মিনিটের কম

২. ৬-১০ মিনিট

৩. ১১-১৫মিনিট

৪. ১৫-২৪ মিনিট

৫. ২৫ মিনিট বা তার বেশি

৪.২. ব্যাগ বহন করে স্কুল থেকে বাড়ির পথে যেতে কতক্ষণ লাগে? বাসে , রিক্সার বা অন্য কোন যানবাহনে বসার সময় অন্তর্ভুক্ত না করে-

১. ৫ মিনিটের কম

২. ৬-১০মিনিট

৩. ১১-১৫ মিনিট

৪. ১৫-২৪ মিনিট

৫. ২৫ মিনিট বা তার বেশি

৪.৩ ব্যাগ বহন করে কি সিঁড়ি দিয়ে উঠানামা করতে হয়?

১. হ্যাঁ

২. না

৫.১ ব্যাকপ্যাক বহন করার পদ্ধতিঃ

১. উভয় কাঁধ পর্যন্ত
২. সামনের উভয় হাত ব্যবহার করে
৩. ডান কাঁধে রউপরে
৪. বাম কাঁধের উপরে
৫. ডান হাতে
৬. বাম হাতে
৭. ঘুরিয়ে
৮. অন্যান্য (বর্ণনাকরণ)

৫.২. উপরের প্রশ্নে নির্বাচিত পদ্ধতিতে কি কারণে ব্যাকপ্যাকটি বহন করেন-

৬. অঙ্গবিন্যাস:

৬.১. আপনার ব্যাকপ্যাক / ব্যাগ নিয়ে হাঁটার সময়, আপনি কি নিজেকে কখনও বলেন যে একটু সোজা হয়ে দাঁড়াই?

১. সবসময়
২. বেশির ভাগসময়
৩. কিছুসময়
৪. খুবসামান্য
৫. আমরা যখন ব্যাকপ্যাক / ব্যাগ পরা শুরু করি

৬.২ আপনার ব্যাকপ্যাক / ব্যাগ দিয়ে হাঁটলে, আপনি নিচের কোনটি অনুভব করেন?

১. সামনে ঝাঁক
২. এগিয়ে চলুন
৩. পার্শ্বাভিমুখী গমন
৪. উপরের কোনটিই নয়

৭. ব্যথা এবং সম্পর্কিত উপসর্গ:

৭.১. আপনার ব্যাকপ্যাক / ব্যাগ বহন করার কারণে আপনার কি বর্তমানে কোন ব্যথা আছে?

১. না
২. হ্যাঁ

৭.২. যদি হ্যাঁ হয়, যেখানে ব্যথা আছে সেখানে চিহ্নিত কর

৭.৩ ভারী ব্যাগ বহনের ফলে, ক্লান্তি বা অবসন্ন বোধ হয়-

১. না
২. হ্যাঁ

৭.৪ আপনার ব্যাকপ্যাক / ব্যাগ বহনের ফলে, আপনি প্রদত্ত কোনটি লক্ষ্য করেছেন-

১. মাংস পেশিতে ব্যথা
২. পিছনে উর্ধ্বভাগে ব্যথা
৩. পিছনে নিম্নভাগে ব্যথা
৪. পা ব্যথা
৫. ঘাড় ব্যথা
৬. বাহুতে / হাতে ব্যথা
৭. হাতে বা পায়ে অবশ অবশ ভাব
৮. অন্যান্য

৭.৫ যদি আপনি উপরের কোনটি পরীক্ষা করে থাকেন, তবে আপনি কি স্বাস্থ্যবিষয়ক (ডাক্তার, নার্স, প্রশিক্ষক, থেরাপিস্ট) সম্পর্কে তথ্য পেয়েছেন?

১. না
২. হ্যাঁ



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)

(The Academic Institute of CRP)

Ref.

CRP-BHPI/IRB/10/17/137

Date: 15.10.2017

To
Tithi Anthonia Corraya
B.Sc. in Physiotherapy
Session: 2012-2013, Student ID 112120017
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: "The School bag's weight influence on the physical status of school going children"

Dear Tithi Anthonia Corraya,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application on 13/08/2016 to conduct the above mentioned thesis, with yourself, as the Principal investigator. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Thesis Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form.

Since the study involves a self-administered questionnaire that takes 20 to 25 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 AM on August 17, 2016 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯

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বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)

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তারিখ : ১১.০৪.২০১৭

প্রতি

অধ্যক্ষ

এঞ্জেলিকা ইন্টারন্যাশনাল স্কুল

বাজার রোড, সাভার, ঢাকা।

বিষয় : রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর এবং তথ্য ও উপাত্ত সংগ্রহ প্রসঙ্গে।

জনাব,

আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতহস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামূলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী তিথী এল্হোনিয়া কোরাইয়া তার রিসার্চ সংক্রান্ত কাজের তথ্য ও উপাত্ত সংগ্রহের জন্য আগামী ১৫.০৪.২০১৭ থেকে ১৫.০৫.২০১৭ তারিখ পর্যন্ত আপনার প্রতিষ্ঠানে সফর করতে আহ্বান। তার রিসার্চ শিরোনাম

"The school bag's weight influence on the physical status of school going children"

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য ও উপাত্ত প্রদান সহ সার্বিক সহযোগিতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ ওবায়দুল হক

সহযোগী অধ্যাপক ও বিভাগীয় প্রধান

ফিজিওথেরাপি বিভাগ

বিএইচপিআই, সিআরপি।

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তারিখ : ১১.০৪.২০১৭

প্রতি
অধ্যক্ষ
এসেড স্কুল
ব্যাংক কলোনী, সাভার, ঢাকা।

বিষয় : রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর এবং তথ্য ও উপাত্ত সংগ্রহ প্রসঙ্গে।

জনাব,
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামূলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী তিথী এছোনিয়া কোরাইয়া তার রিসার্চ সংক্রান্ত কাজের তথ্য ও উপাত্ত সংগ্রহের জন্য আগামী ১৫.০৪.২০১৭ থেকে ১৫.০৫.২০১৭ তারিখ পর্যন্ত আপনার প্রতিষ্ঠানে সফর করতে আহ্বান। তার রিসার্চ শিরোনাম

"The school bag's weight influence on the physical status of school going children"

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য ও উপাত্ত প্রদান সহ সার্বিক সহযোগিতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

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ফিজিওথেরাপি বিভাগ
বিএইচপিআই, সিআরপি।

অনুমতি দেয়া হল।
সহযোগিতা করুন।
১১/০৪/১৭
মুখার্জি