The Effects of Heavy Backpack on Young Children

Lisa (First M. Last)

School or Institution Name (University at Place or Town, State)

The Effects of Heavy Back Pack on Young Children

# Introduction

It is very common for the schoolchildren to carry heavy and overstuffed backpacks. This may be good for the brain for children but not for their body and physical health. A child whose backpack is too heavy may suffer from back and shoulder pain. Most of the parents are unaware that a child’s backpack must be less than ten to twenty percent of their body weight, but when this weigh exceeds the limit there is a likelihood of not only body pain but it can also lead to injury. Having such issues in childhood may lead to severe issues in adulthood. This paper seeks to highlight the negative impacts of carrying a heavy backpack for young children. Heavy backpacks are not suitable for the school going children because they contribute to the acute backpack injuries, produces severe back pain and affects posture if not carried according to the body weight.

# Discussion

#  Contribution to Acute Injuries

Backpacks are intended for the ease and convenience but they can make a contribution to the injuries if they are used properly. Overloaded backpacks and improper use of them cause injuries among young children, which is proven by different studies. A study indicates that the number of backpack injuries according to the data obtained from National Electronic Injury Surveillance System of two years show 12,688 estimated injuries related to backpacks and back carriers (Wiersema, Wall, & Foad, 2003). This reveals that heavier backpacks and related carriers like camping backpacks and book bags can be a source of injuries among children and adults. The common forms of injuries resulting from the backpacks are back injuries, head and face injuries, neck injuries and rare sites including leg, hip, and knee (Wiersema et al., 2003). It can be understood that the reason for the injuries from carrying heavier backpacks can be the standard use of wearing, lifting and taking off backpacks.

While carrying, lifting and taking off the heavier backpacks, body parts can face different injuries, which can be understood by analyzing the mechanism of injuries. Study indicates that the most common mechanism of backpack injuries is tripping over the backpack (Wiersema et al., 2003). Tripping over the backpack results in the damages in wrist/elbow, and foot/ankle. Other mechanisms of injuries involve getting hit by some other person or getting hit by the backpack, and the incidents happen at both school and at home (Wiersema et al., 2003). In this way carrying and lifting of backpacks can be the reason for a number of injuries on different sites at the body. The typical mechanism of lifting up the bags carrying heavier weights and hitting others can result in severe injuries.

The common form of injuries resulting from backpacks is on the head and face. It is a common observation that carrying backpacks can result in pain and injuries at the back. A study finds it quite surprising that wearing a heavier backpack is associated with only a smaller number of injuries at the back and more on head and face. Since the most common mechanism of backpack injuries is by being hit by another person of his/her backpack, this results in injuries on face and head (Wiersema et al., 2003). It also revealed that the common use of backpack by lifting and wearing heavier backpacks do not directly cause injuries while injuries result from the non-standard use of it, that is tripping, hitting, etc. Backpack injuries can be avoided if the safety initiatives are centered on non-standard use of the backpack.

### Severe back pain in School Children

Most of the schoolchildren face the issue of having back pain and carrying heavier backpacks increases the comparative risk of pain. The daily responsibility of taking books and other material to school results in carrying of heavier backpacks. The outcome of carrying heavyweight is in the form of forwarding leaning of head and trunk and it ultimately results in pain. A study conducted from the 12 children carrying heavy backpacks reported that heavier backpacks result in the musculoskeletal pain among the schoolchildren (Aundhakar, Bahatkar, Padiyar, Jeswani, & Colaco, 2015). The study was carried out on a male group of students but a number of other studies also indicate that carrying heavier backpacks are highly linked with the prevalence of back pain. There is no doubt in the fact that carrying heavy loads on the back in the form of backpacks is detrimental for schoolchildren and show no favorable outcomes.

The back pain among the schoolchildren is due to the difference in the ratio of body weight and weight of backpacks. Studies reveal that the students who carry backpacks with a weight higher than 10 to 15% of their body weight have a higher risk of developing (Aundhakar, Bahatkar, Padiyar, Jeswani, & Colaco, 2015). It is highly recommended that this ratio must not surpass 10% of the body weight to reduce the risk of back pain and musculoskeletal pain. Backpacks influence the postures and head-neck angle and owing to these biochemical changes, back pain becomes a major issue in the long run. Most of the parents are unaware of the precise ratio of backpacks weight and children body weight and therefore they let their children carry heavy and overstuffed backpacks, which makes back pain one of the most prevalent issues among young school going children.

Heavy backpacks strain muscles and joints if they are carried for a longer period of time. The study examined the prevalence of back pain among the schoolchildren carrying heavy backpacks depending on some other factors such as mode of transportation. The results show that students who walk to school are more affected by weighty backpacks as compared to those who use some mode of transportation such as a car, and bus (Aundhakar et al., 2015). This shows that carrying heavy backpacks for a longer period of time results in a greater risk of pain.

### Affects posture if not carried in the right position

Heavier backpacks are also profoundly linked with body posture and body strain while walking. A study by Chen and Mu studies the impact of backpacks weights and position on body posture and found that head flexion angle was impacted by the weight of the backpack. This means that carrying heavier backpacks is not good for the body posture and it results in a decline in lumbar curvature and it increases the Trunk flexion. The study also emphasizes that carrying backpacks in the right ratios of the weight of the body and backpack is essential to reduce the negative impacts on posture (Chen & Mu, 2018). Lighter backpacks allow the children to sustain normal lumbar posture. This shows that heavy backpacks are not suitable for body postures.

The heavy backpack and its wrong position also result in the discomfort of the neck and shoulders. The study indicates that the height of back pain is linked with the neck and shoulder discomfort (Chen & Mu, 2018). The highest discomfort is found in the neck, waist, and the shoulders. This shows that putting the weight of backpack at the wrong position results in high discomfort and therefore backpacks must be placed in the right position. Carrying heavy backpacks at the right position helps in reduction of discomfort level and pain.

The weight of the backpack also affects the muscular activation if the weight is not carried according to the ratio of body weight. A study by Chen and Mu found that several backpack weights affect trapezius and erector spine muscles (Chen & Mu, 2018). This muscular activation is also influenced by the variations in the weights of the backpack and it increases with the increase in weight. This shows that the right ratio of the weight of backpack and body weight is essential to maintain the body posture and muscles at the comfortable position. Parents and children are unaware of the right position to put backpack and right ratio of body and backpack weight, which produces negative outcomes in the form of the poor muscular condition and poor body posture. Carrying a backpack of weight no more than 10% of the body weight and at the right position is only acceptable for the schoolchildren to avoid muscle pain and poor body posture.

# Conclusion

To sum up, carrying heavier backpacks has no positive outcomes for the schoolchildren. It negatively affects the body and muscles of children which are not made to bear heavy weights. The analysis of research studies regarding negative impacts of heavy backpacks among the school-going children reveals that weighty backpacks contribute to the severe backpack injuries, provokes severe back pain and also negatively affects posture. The main reason for this is unfamiliarity with the right ratio of backpack weight and body weight of schoolchildren. If not carried according to the body weight and in the right position, backpacks are a danger to the physical health of children. Therefore, seeing the negative impacts of heavy backpacks on children, it is the utmost duty of health care and education communities to educate parents and children regarding the right ratio of backpack weight in relation with the body weight. In this way, children can be protected from the harms of carrying a heavy backpack. In addition, children must be well-versed about careful lifting, carrying and tripping of backpacks.

# References

Aundhakar, C. D., Bahatkar, K. U., Padiyar, M. S., Jeswani, D. H., & Colaco, S. (2015). Back pain in children associated with backpacks. *Indian Journal of Pain*, *29*(1), 29.

Chen, Y.-L., & Mu, Y.-C. (2018). Effects of backpack load and position on body strains in male schoolchildren while walking. *PloS One*, *13*(3), e0193648.

Wiersema, B. M., Wall, E. J., & Foad, S. L. (2003). Acute backpack injuries in children. *Pediatrics*, *111*(1), 163–166.