



Original Research Article

KNOWLEDGE AND ATTITUDE OF SCHOOL TEACHERS ABOUT THE HARMFUL EFFECTS OF CARRYING HEAVY SCHOOL BACK PACKS IN STUDENTS FROM SELECTED SCHOOLS OF KANYAKUMARI DISTRICT, SOUTH TAMIL NADU

Praythiesh Bruce¹, Prateek Bobhate², Abhijit Vinodrao Boratne³, K.U.Suresh Balan⁴

¹PhD student, Shri Sathya Sai Medical College and Research Institute, Affiliation to Sri Balaji Vidyapeeth (SBV) (Deemed to be University) Ammapettai, Chengalpet District, Tamil Nadu, India.

²Professor and Head, Department of Community Medicine, Shri Sathya Sai Medical College and Research Institute, Affiliation to Sri Balaji Vidyapeeth (SBV) (Deemed to be University) Ammapettai, Chengalpet District, Tamil Nadu, India.

³Additional Professor Department of Community and Family Medicine, AIIMS Deoghar, Jharkhand, Pin: 8141124

⁴Professor and Head, Department of Community Medicine, Kanyakumari Government Medical College, Asaripallam, India.

Received : 04/11/2023
Received in revised form : 02/01/2024
Accepted : 19/01/2024

Corresponding Author:**Dr.Prateek Bobhate**

Professor and Head, Department of Community Medicine, Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth (SBV) (Deemed to be University) Ammapettai, Chengalpet District, Tamil Nadu, India.
Email:brucephdmgrci@gmail.com

DOI:10.5530/ijmedph.2024.1.57

Source of Support:Nil,
Conflict of Interest:Nonedeclared

Int J Med Pub Health
2024; 14 (1); 300-304

ABSTRACT

Background: School education is an important part of child's overall growth. But, during the process of attaining school education, children are burdened with heavy back packs which can cause serious health issues. **Objectives:** The objectives of the study were to assess the knowledge and attitude of school teachers about the ill effects of carrying heavy back packs in children.

Materials and Methods: A school based cross sectional study was done among 264 school teachers teaching 6th to 8th standard selected through multistage stratified random sampling technique from selected schools of Kanyakumari district from May 2022 to May 2023. Data collected using a predesigned pre tested and self-administered questionnaire was entered into MS Excel and was analysed using SPSS version 26.0.

Results: The results revealed that only 31.8 % of the school teachers knew that the ideal proportion of back packs, 56.4 % knew that the heavy bag packs can cause headache, neck pain and leg pain, 49.2 % knew that it causes shoulder pain and 43.6% knew that it causes back pain in students. For questions on attitude, 20.5 % and 42% of them agreed that heavy back packs can be a reason for tiredness and that it can cause mental stress, respectively.

Conclusion: While only half of the participants were knowledgeable about the physical effects of heavy back packs in students, less than half of them were of the attitude that it can have mental and emotional effects.

Keywords: Knowledge, attitude, heavy back packs, school teachers, Tamil Nadu.

INTRODUCTION

An important part of a child's overall growth is their education in schools. The school education formally takes place within a school under a specially designed curriculum including the necessary books as per the standard, facilitated by school heads, teachers and other non-teaching staff of the school. The students spend hours in school, lasting from morning till afternoon or evening, in most of the days of a whole year.^[1] But many a times, during the

process of attaining school education, children are burdened with heavy back packs which can cause serious health issues as well as problems in the overall development. Various studies conducted in different parts of the world suggest that carrying heavy school backpacks can be a reason for increase in the incidence of low back pain, abnormal posture, and other musculoskeletal problems among school going children[2–8].It can cause severe shoulder pain, leg pain and headache besides affecting their spinal posture, foot shape, and gait.^[1,2,3] It may also

interfere with a child's interest for learning and eventually lose his/her learning ability and creative skills. The weight of back packs of school children is mainly contributed by text books, note books, lunch packs, water bottles, project albums and other academic materials.^[4] A heavy back pack may cause a child to compensate by leaning his body forward which can strain the muscles in his neck, shoulders and back.^[5] As their school back pack weight increases, the bodies of students are being subjected to the same stress as those faced by trained tactical professionals. But, unlike trained tactical professionals, a school student is required to carry heavy loads almost every day for a period of 10 to 12 years, without the benefit of specific physical training to endure such stress at an age prior to reaching the full maturity of their musculoskeletal system.^[6] As a way to reduce this burden, various international organisations put forward suggestions regarding the ideal weight a school back pack and it is concluded that the weight of a school back pack should not exceed 10 per cent of the child's body weight.^[7] Since school teachers play a key role in a child's education and are the stakeholders involved in policy making, this study is intended to assess the knowledge and attitude of school teachers of 6th to 8th standard about the ill effects of carrying heavy back packs in students.

MATERIAL AND METHODS

A school based cross sectional study was conducted among school teachers of 6th to 8th std in selected schools in Kanyakumari District of South Tamil Nadu from May 2022 to May 2023. The study was conducted after obtaining the approval of Institutional Ethics Committee of Kanyakumari Government Medical College (IHEC REF No: F-006/IEC/2022), Directorate of Medical Education, Chief Educational officer of Kanyakumari district and from the school principals of the selected schools. This study and its objective is part of a main PhD study '**Effectiveness of an Intervention for reducing school back pack weights among school students at selected schools in Kanyakumari District, Tamilnadu –A Mixed Methods Study**' of the first author. The school teachers who teach subjects (Music and dance instructors were excluded) and those who consented were included in the study. The sample size was scientifically calculated to be 264 at 95% confidence interval with a margin of error at 4 % and the percentage of interest at 12%.^[4] A multistage stratified random sampling technique was adopted to select the study participants for the study. (FigNo:1). The total no: of schools in Kanyakumari district is 1232, out of which, 682 schools have 6th to 8th class. The schools in the district varied based on the type of administration as Government, Private and Government aided. A fixed no: of 8 schools were selected from each category to get

equal participation from all categories. From the total of 24 schools, 11 teachers teaching 6th to 8th standard were selected randomly using lottery method from the list of teachers given by the respective schools. The data was collected using a pre designed, pre tested, structured and self-administered questionnaire. The questionnaire included questions to assess the knowledge regarding short term and long-term side effects of carrying heavy back pack and knowledge about ideal ways to carry a back pack. It also contained questions to assess the attitude of the study subjects on the cause of school bags becoming heavy and also on the effect of back packs in changing the creative skills and mental health of the students. The study subjects were approached during their free time, either before, after or during school hours. The details of the study were explained and consent was taken prior to handing over of the questionnaire. A sufficient amount of time was given to the participants for completing the questionnaire. After collecting the filled questionnaire, the principal investigator gave health education to the participant regarding the ill effects of carrying heavy back packs. Privacy and confidentiality were maintained throughout the conduct of the study. The data collected was entered into MS excel and was analysed using SPSS version 26. The results are expressed in percentages.

RESULTS

The total number of study subjects included in the study were 264. The response rate was 100% among the study participants.

The study results showed that only 31.8 % of the school teachers knew that the ideal proportion of back packs should be less than 10% of the body weight of the child. Among the study participants more than half of them (56.4 %) knew that the heavy bag packs can cause headache, neck pain and leg pain. Almost half of the participants of the study (49.2 %) knew that it can cause shoulder pain and less than half (43.6%) knew that it causes back pain in students.

The knowledge regarding long term effects of carrying heavy back packs in students was assessed among study participants and the results revealed that, 55.3 % knew that it can affect the physical growth and equal number of them (55.3%) knew that it can affect the physical stature of the children.

For the question to assess the knowledge on effective ways to reduce the effect of heavy back packs, 75.8% of them responded rightly that, carrying the back pack on both the shoulders can distribute the weight and reduce the ill effect of carrying it. Only 34.5 % of the school teachers knew that there are ideal ways to lift and carry a back pack. Less than half (42%) of the study participants knew that multiple compartments can ensure

uniform distribution of the weight of the back pack. [Table 1]

Among the school teachers, 20.5% of them agreed to the fact that heavy back packs can be a reason for tiredness among school students. Less than half (42%) of them were of the attitude that it can be contributed as a cause for accelerating mental stress among children. 44.7% of them agreed to the fact that heavy back packs can be a reason for the reluctance among students to go to school. About 40.5% of the school teachers believed that carrying heavy back packs can be a reason for children getting bored in educational activities. Only 22% of the school teachers were of the attitude that carrying heavy backpacks to school every day can eventually affect the creative skill in students and less than half (34.1%) of them were of the attitude that it can lead to frustration among school students towards education.

Majority (62.5%) of the participants was of the attitude that carrying additional books to school is the reason for heavy back packs, while only 34.5% considered the reason for heavy back packs as the objects used for co-curricular activities along with curricular activities contribute to heavy back packs.

34.5% was of the attitude that ideal way of carrying back pack should be followed to reduce the ill effects of heavy back pack. [Table 2]

*Simple random sampling

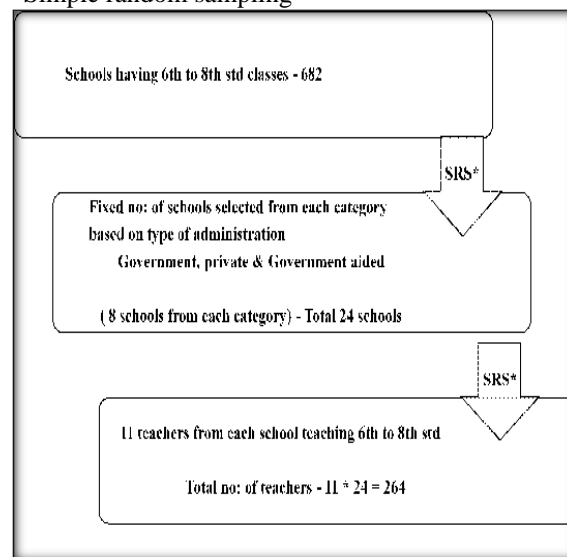


Figure 1: Selection of study participants through multistage stratified random sampling

Table 1: Assessment of knowledge among school teachers regarding the ill effects of carrying a heavy back pack in students. (n= 264)

Questions for assessing the knowledge among study participants	Response	
	Correct Frequency (Percentage)	Wrong Frequency (Percentage)
Ideal proportion between child's weight and child's backpacks weight	84 (31.8%)	180 (68.2%)
Ill effects of carrying heavy back pack		
Acute conditions like -		
Headache, neck pain, and leg pain	149 (56.4%)	115 (43.6%)
Shoulder pain	130 (49.2%)	134 (50.8%)
Back pain	115 (43.6%)	149 (56.4%)
Long term effects -		
Affect physical growth	146 (55.3%)	118 (44.7%)
Negative effects on child's physical Structure	146 (55.3%)	118 (44.7%)
Can cause Spinal cord problems	111 (42%)	153 (58%)
Ideal ways to reduce the ill effects of carrying heavy back packs		
Distribute the whole weight by carrying it on both shoulders	200 (75.8%)	64 (24.2%)
Following ideal lifting and carrying technique	91 (34.5%)	173 (65.5%)
Multiple compartments can ensure more uniform weight distribution	111 (42%)	153 (58%)

Table 2: Attitude of study participants towards the effect of students carrying heavy back packs (n=264)

Attitude of the participants	Agree Frequency (Percentage)	Disagree Frequency (Percentage)
Tired after coming from school	54 (20.5%)	210 (79.5%)
Can cause mental stress	111 (42%)	153 (58%)
Reluctance to go to school	118 (44.7%)	146 (55.3%)
Bored in educational activities	107 (40.5%)	157 (59.5%)
Affect the child's creative skills	58 (22%)	206 (78%)
Frustration towards education	90 (34.1%)	174 (65.9%)
Additional books are the reason for heavy back packs	165 (62.5%)	99 (37.5%)
Objects used in curricular and cocurricular activities together are the cause of heavy back packs	91 (34.5%)	173 (65.6%)
Way of carrying the bag is important	91 (34.5%)	173 (66%)

DISCUSSION

The school teachers are the stakeholders involved in scheduling their respective class hours and the

decision makers who can guide the students to bring the books and other academic materials required for the day. They can facilitate in scheduling the classes in such a way that children need to bring very few books to school. As per the Government guidelines,

ideal weight of back packs should be less than 10% of the body weight of the child and in this study 68.2 % of the study participants didn't know about this important policy which is in line with the findings of a study conducted in Meerut and Pakistan among school teachers where, 90% and 78.67 %, respectively were not aware about the guidelines given by Central Government.^[8,9] This unawareness may be the one of the major reasons for children bringing heavy back packs to the school.

The current study revealed that around half of the school teachers knew about the acute ill effects caused by carrying heavy back pack which is similar to studies conducted in Meerut and Pakistan, where 60% and more than 50% of the teachers respectively, knew that carrying heavy bags can cause serious health problems.^[8,9] Another study conducted among school teachers in Mangalore revealed that only 34% of them knew about the ill effects of carrying back packs.^[4] The knowledge about ill effects of carrying heavy back packs is important as this will form a basis for reducing the "Back pack syndrome" by strengthening the 'Back pack policy' and adopting this policy by all schools, facilitated through school teachers.

When the knowledge about ideal ways to reduce the ill effects of carrying heavy back packs was assessed among the study participants, the results revealed that 75.8% of them knew that the effect of back pack can be reduced when the whole weight is distributed on both the shoulders rather than carrying it in single shoulder, but only 34.5% knew that there is an ideal lifting and carrying technique to reduce the ill effects of backpack and 42 % of them knew that weight can be distributed by compartmentalisation of the bag. In a similar study, 79% of teachers knew that poorly positioned backpack and the varying duration of carrying can be reasons for the ill effects of carrying back packs.^[8]

The results of this study on knowledge about the ill effects of carrying a heavy back pack throw a light on the fact that, even though around half of them knew the ill effects, less than half of them knew about the fact that there is an ideal proportion for weight of back packs and there are various other alternatives to reduce the ill effects of heavy back packs.

The attitude of the school teachers about the heavy back packs reveals that even though the knowledge about the physical harm which can be caused by carrying heavy back pack is comparable, the attitude about other effects including the mental stress which can affect their other abilities is questionable. In the current study when the attitude of the school teachers whether the heavy back packs can be a reason for feeling tired, only 20.5 % agreed which is similar to 28.8 % in a study conducted in Pakistan.^[9] While 44.7 % of the school teachers agreed that heavy back packs can be a reason for reluctance among students to go to school and 40.5% agreed to

the reason for students getting bored of education, only 22% believed that it can affect the creative skills of a student and these responses are 28.8%, 50% and 32.6% in a similar study.^[9]

When the attitude of the school teachers was assessed about the reasons for back packs becoming heavy, majority (62.5%) of them agreed that additional books are the reason for this, which is similar to another study where it is 75%.^[9]

All these findings strengthen the necessity to do interventions like health education about harmful effects of back packs including both physical, mental and emotional aspects, training on ideal postures to be maintained while lifting and carrying a back pack and other techniques to reduce back pack weights.

CONCLUSION

The study concluded that, the knowledge of the school teachers about the physical effects of carrying a heavy back pack in students is comparable while the attitude about the mental and emotional effects of the same needs to be reinforced so that it can pave the way for following government guidelines and thereby improving the health of students and for the betterment of education system as a whole.

Recommendations

School teachers need to be trained about the ill effects of carrying heavy back packs in children. The schedule should be prepared in such a way that the child carries only what is necessary to school. There should be provision for individual lockers for children so that they need not bring all the books from home. The children would be physically active and healthy if they have sports hours most of the days in a week. Students should be taught about ideal lifting and carrying techniques of back packs. Parents should be educated about the need for selecting ideal back packs for their children, which has features like padded shoulder straps, multiple compartments and good back support.

Acknowledgement

I would like to thank the guide for his motivational support and guidance throughout the conduct of the study and I also extend my sincere gratitude to teachers, parents and students for being the unwavering pillars of support throughout this study.

REFERENCES

1. Final School Bag Policy 2020.pdf [Internet]. [cited 2023 Oct 29]. Available from: <https://ncert.nic.in/pdf/Final%20School%20Bag%20Policy%202020.pdf>
2. Spiteri K, Busuttill ML, Aquilina S, Gauci D, Camilleri E, Grech V. Schoolbags and back pain in children between 8 and 13 years: a national study. *Br J Pain*. 2017 May;11(2):81–6.
3. Mwaka ES, Munabi IG, Buwembo W, Kukkiriza J, Ochieng J. Musculoskeletal pain and school bag use: a cross-sectional study among Ugandan pupils. *BMC Res Notes*. 2014 Apr 9;7(1):222.

4. Sa AS, A A, Si A, Aa A, Am A, Mh AH. A Study of School Bag Weight and Back Pain among Primary School Children in Al-Ahsa, Saudi Arabia. *Epidemiol Sunnyvale Calif* [Internet]. 2016 Feb [cited 2024 Jan 27];6(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/27570708/>
5. Adeyemi AJ, Rohani JM, Rani MRA. Interaction of body mass index and age in muscular activities among backpack carrying male schoolchildren. *Work Read Mass*. 2015;52(3):677–86.
6. Dianat I, Javadivala Z, Allahverdipour H. School Bag Weight and the Occurrence of Shoulder, Hand/Wrist and Low Back Symptoms among Iranian Elementary Schoolchildren. *Health Promot Perspect*. 2011;1(1):76–85.
7. Vaghela NP, Parekh SK, Padsala D, Patel D. Effect of backpack loading on cervical and sagittal shoulder posture in standing and after dynamic activity in school going children. *J Fam Med Prim Care*. 2019 Mar;8(3):1076–81.
8. Sankaran S, John J, Patra SS, Das RR, Satapathy AK. Prevalence of Musculoskeletal Pain and Its Relation with Weight of Backpacks in School-Going Children in Eastern India. *Front Pain Res*. 2021 Aug 18; 2:684133.
9. Humaira Khan, Hadiqa Adnan, Sara Qayyaum, Hajar Jamshaid, Rabiya Tahir, Qurat-ul-Ain. Association of Heavy School Bags with Musculoskeletal Discomfort among Primary School Children of Islamabad, Pakistan. *J Islamabad Med Dent Coll*. 2021 Mar 31;10(1):358–64.
10. Mushtaq M. Effects of Heavy School Bags on Students' Health at Primary Level in District Haveli (Kahutta) Azad Jammu and Kashmir. *J Dev Soc Sci*. 2021 Dec 31;2(IV):456–66.
11. IJRCS202301006.pdf [Internet]. [cited 2023 Nov 25]. Available from: <https://ijrcs.org/wp-content/uploads/IJRCS202301006.pdf>
12. Walicka-Cupryś K, Skalska-Izdebska R, Rachwał M, Truszczyńska A. Influence of the Weight of a School Backpack on Spinal Curvature in the Sagittal Plane of Seven-Year-Old Children. *BioMed Res Int*. 2015; 2015:1–6.
13. Perrone M, Orr R, Hing W, Milne N, Pope R. The Impact of Backpack Loads on School Children: A Critical Narrative Review. *Int J Environ Res Public Health*. 2018 Nov;15(11):2529.
14. 6 Ways to Promote Safe Backpack Use [Internet]. [cited 2023 Dec 1]. Available from: <https://communit.aota.org/blogs/katie-riley/2019/09/06/6-ways-to-promote-safe-backpack-use>
15. Committee on Physical Activity and Physical Education in the School Environment, Food and Nutrition Board, Institute of Medicine. *Educating the Student Body: Taking Physical Activity and Physical Education to School* [Internet]. Kohl HW, Cook HD, editors. Washington (DC): National Academies Press (US); 2013 [cited 2023 Dec 1]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK201500/>
16. Karim R, Karim, Ali S, Thalho N, Karim S, Ali N, et al. A Research Project Regarding the Effects of Heavy School Bags On the Physical Health of Students of Primary Level in Karachi PJAE. 2021 Jan 1; 18:3327–43.