

Correlational Study to Assess the Musculoskeletal Quandry with the Bag Carried by Children Studying at Selected School of Pune

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Abstract

Introduction and objective: The prevalence rate of musculoskeletal pain among Indian school-going children is 55% to 85% in between and the recommended weight is given to school children should be less than 10% of the body weight but children carry bag weight on the body i.e. 15% of the body weight. Hence the main **objective** of this study was to correlate the weight of the student with bag weight and musculoskeletal quandry. **Methodology:** Quantitative approach with non-experimental correlational design used in this study to assess the musculoskeletal quandry with the bag carried by children studying at selected school of Pune. Musculoskeletal pain was assessed with the help of standardized tool which was Modified cornell musculoskeletal discomfort questionnaire, Wongs baker pain rating scale. 200 school children were selected by using Non-probability convenient sampling technique. In this study the data was analysed using Pearson coefficient correlation test, and Fishers' exact test. **Result:** The following observation were made from the study. The p-values for this test were large for these parameters, which is evident that though there is a negative correlation of weight of students with Pain frequency (0.490), Discomfort (0.422), Interference (0.432), and Pain (0.486), the correlation is not significant Pearson's correlation coefficient between the weight of school children and bag weight was 0.12 which is positive. Fisher's exact test was applied to find the association and the result shows that the p-value is less than 0.05 it indicates that there is a significant association with the musculoskeletal quandry. **Conclusion:** Hence, the significance of this study indicates of evidence for the null hypothesis and analysis and results show that there is a negative correlation between the weight of the student with the bag weight.

Keywords: Assess, Musculoskeletal Quandry, Heavy bag pack, School children.

Introduction

School children have been estimated that 40 million students across the overall United States carry their stuff or material in their school backpacks and there is a very serious concern about how the heavy backpack gives the harmful effect on their spine. The multiple professional associations have given the guidelines for safe backpack e.g. American Academy of Orthopedic Surgeon, American Occupational Therapy⁽¹⁾.

The prevalence rate of musculoskeletal pain among Indian school-going children is approximate 55% to 85% in between and the recommended weight is given

to school children should less 10% of the bodyweight but children carry bag weight on the body i.e. 15% of the body weight.²

The parents had risen their voice against the organization and representative who are present in the schools and the teachers, health professionals, school authorities, students themselves have risen the voice against the heavy loads which must be carried by students.⁴ There are many pieces of research which have proven the strong correlation between heavy school bag and physical problem in all students that can result in severe complications.⁵

Objectives

- To assess the musculoskeletal quandry of the students.
- To correlate the weight of the student with bag weight and musculoskeletal quandry.
- To associate the selected demographic variables with the musculoskeletal quandry

Material and Method

It is a quantitative study; Non-experimental correlation design has been used. Study conducted in selected schools of Pune. 200 school children were included in the study using non-probability convenience sampling technique. The study participants were given proper information about the study and consent obtained from their parents. Their confidentiality and anonymity have been maintained and the data was obtained with the help of standardized tool which was Modified cornell musculoskeletal discomfort questionnaire, Wongs baker pain rating scale. **Findings:** The following observation were made from the study based on description of samples (students) based on their personal characteristics in terms of frequency and percentages. In this study, the sample consist of 200 school children in which 55.5% were male and 44.5% were female. Majority of school children fall in the age group from 13-14 years whereas 27% school children in age group from 11-12 years and the minimum children fall in the age group of 15 years. In this study data were collected from 6th, 7th, 8th and 9th standard student in which maximum number of students were studying in the 9th standard i.e.30.5%. Among 111 male students, 45.9% had weight ranging from 25.9-54.8 kg, on other hand among 89 girls 43.8% of the girls had weight ranging from 26.7-53.4 kg. 55% of the male children had height ranging from 133.0-158.6 cm whereas majority of the female students i.e.49.4% fall in the shortest height group ranging from 133.7-157.5 cm. Maximum number of the student had school bus as their mode of transport. Maximum number of students had their classroom on 3rd floor whereas 2nd and 4th floor had 30.5% students each.

Table 1: Frequency of Pain, ache experience among the students based on Modified Cornell Musculoskeletal scale

N=200

Frequency of pain	Freq	%
Slight frequent	131	65.5%
Moderate frequent	68	34.0%
Very frequent	1	0.5%

The data in table1. Shows that majority of 65.5% of the students had slight frequent pain ache whereas 34% of them had moderate frequency of pain, ache and 0.5% of them had very high frequency of pain and ache.

Table 2: Discomfort experienced due to ache, pain among the students based on Modified Cornell Musculoskeletal scale

N=200

Discomfort due to pain, ache	Freq	%
Slight discomfort	189	94.5%
Moderate discomfort	10	5.0%
Very much discomfort able	1	0.5%

The data in table 2. Shows that maximum of 94.5% of the students had slight discomfort due to pain, ache, 5% of them had moderate discomfort and 0.5% of them had very much discomfort able due to pain and ache.

Table 3: Interference experienced due to ache, pain among the students based on Modified Cornell Musculoskeletal scale

N=200

Interference due to pain, ache	Freq	%
Slight interference	180	90.0%
Moderate interference	20	10.0%
Very much interference	0	0.0%

The data in table 3. Describes that among 200 school children in which 90% of the students had slight interference due to pain, ache whereas 10% of them had moderate interference due to pain and ache.

Table 4: Pain among the students based on Wong Baker Faces Pain rating scale

N=200

Pain	Freq	%
No hurt (0)	14	7.0%
Hurts little bit (2)	63	31.5%
Hurts little more (4)	67	33.5%
Hurts even more (6)	43	21.5%
Hurts whole lot (8)	12	6.0%
Hurts worst (10)	1	0.5%

The data in table 4. Shows that 7% of the school students had no hurt, for 31.5% of them had little bit hurt, for 33.5% of them, hurt little more, for 21.5% of them had hurt even more, for 6% of them it hurt whole lot and for 0.5% of them hurt worst.

Table 5: Correlation with the weight of the student with bag weight and musculoskeletal Quandry

N = 200

Parameter	r	t	p-value
Pain frequency score	-0.04	0.02	0.490
Discomfort score	-0.12	0.20	0.422
Interference score	-0.11	0.17	0.432
Pain score	-0.05	0.03	0.486
School bag weight	0.12	0.21	0.415

Researcher used Pearson’s correlation coefficient to assess the correlation between weight of the student with bag weight and musculoskeletal quandry (Pain frequency, Discomfort, Interference and Pain). Correlation coefficient of weight with musculoskeletal quandry were negative, which indicates that less the weight of the student, more are the pain frequency, discomfort due to pain & ache, interference due to pain & ache. The significance of this relationship was tested

using t-test for significance of correlation coefficient. The p-values for this test were large for these parameters, which is evident that though there is negative correlation of weight of students with musculoskeletal quandry. Pearson’s correlation coefficient between weight of school children and bag weight was 0.12 which is positive. The strength of this positive correlation was tested using t-test for significance of correlation coefficient. P-value for this test was large (greater than 0.05), the correlation between weight of school children and weight of bag though positive is not significant.

Fisher’s exact test was used for association between frequency of pain, interference due to pain, Wong baker pain scale and demographic variables of school children: All the p-value corresponding to class, gender, weight of the female child, floor of classroom, height of the male child is small (less than 0.05), demographic variables are found to have significant association with frequency of pain of school children. Hence, the significance of this study shows that the p-values are greater than 0.05 it indicates evidence for the null hypothesis this means the researcher retains the null hypothesis and rejects the alternative hypothesis.

Discussion

Similar results were seen in a study the researcher did the study on effect of weight of backpack and physiological stress among school going children as the study result say that in their study the p-value was higher than 0.05 level of significant which showed that the null hypothesis was accepted and there were no significant differences between the comparison of backpack weight and recommended backpack weight and physiological stress due to carrying heavy backpacks⁽²⁾.

Ethical Clearance: Ethical clearance was taken from Symbiosis College of Nursing Institutional Research Committee authorities before conducting the study. Informed consent was taken from the parents. Information given to the responders regarding the data collection procedure. The collected data was used only for research purpose and kept confidential.

Conflict of Interest: Nil

Source of Funding: Self

Recommendation

· It is suggested that the study may be replicated using a larger population of samples, to know the relationship heavy bag weight with a musculoskeletal problem.

· It is also suggested that the researcher can focus on the calcium and other micronutrient assessment with quandry issues.

· A further research study should focus on lifestyle and endurance and psychological domain causing fatigue and pain cannot be overlooked.

Conclusion

School attendance is a daily routine for school children but with that carrying heavy backpack is also the same as a daily routine for students. The improper handling of school bags with excessive bag weight can lead to back pain in schoolchildren. It is recommended that the children carrying school backpack not more than 10% of their body weight but it is a concern for school

children since it increases the risk of chronic back pain in their adulthood⁽³⁾.

References

1. Talbott N, Bhattacharya A, Davis K, Shukla R, Levin L. School backpacks: It's more than just a weight problem. *Work*. 2009;34(4):481-494.
2. Shalini Agarwal A. Assessing the Effect of Postural Discomfort on School Going Children Due to Heavy Backpacks. *Journal of Ergonomics*. 2015; s4.
3. Spiteri K, Busuttil M, Aquilina S, Gauci D, Camilleri E, Grech V. Schoolbags and back pain in children between 8 and 13 years: a national study. *British Journal of Pain*. 2017;11(2):81-86.
4. Dianat, I., Javadivala, Z., & Allahverdipour, H. (2011). School bag weight and the occurrence of shoulder, hand/wrist and low back symptoms among Iranian elementary schoolchildren. *Health Promotion*, 1(1), 76-85.
5. Goodgold, S., Corcoran, M., Gamache, D., Gillis, J., Guerin, J., & Coyle, J. Q. (2002). Backpack use in children. *Pediatric Physical Therapy*, 14(3), 122-131.