Factors Associated with Neck Pain among Secondary School Children in Northern Dhaka City

Mohammad Kamrujjaman[1], Shwe Shwe U Marma[2], Easmin Ara Doly[2], Rezaul Hossain Razu[2], Ekramul Hasan[2], Mamata Rani Barman[2], Sanjana Zerin[2]

[1]Department of Physiotherapy, State College of Health Sciences
[2]Department of Physiotherapy, National Institute of Traumatology and Orthopedic Rehabilitation

***Corresponding Author: Mohammad Kamrujjaman**
Email: kamrujjaman10@gmail.com
Phone: 01819517011
Postal address: State College of Health Sciences
262/A, Road-27, Dhanmondi,
Dhaka-1209, Bangladesh

Abstract: The present study was conducted to determine the factors associated with neck pain among secondary school children. A cross sectional study was carried out among 122 school children comprising of 66 boys and 56 girls. Maximum age range was 13-16(67.0%) where more than half of the participants were underweight (63.9%). A greater percentage (59.8%) of participants' study time was <8 hours & time spend in sitting position was 36.9%. Majority (74.6%) of the participants reported about their comfortability of sitting position in class room, about 75.4% of the children school bag was between 3 to 5 kg whereas most of them (74.6%) were going to school by walking, less than half (40.2%) of the participants used computer & most of them (55.1%) spend 1 to 3 hours time using computer. High percentage (60.8%) of the respondent complain moderate level of pain with intermittent in nature, radiating neck pain was 44.3% and about 35.2% of the participants pain increasing time in the morning. Prevalence of neck pain among school children was 80% & factors that showed significant relationship were between neck pain & age (P= 0.000<0.05), school bag weight (P=0.045<0.05) & time spend in sitting position (P=0.043<0.05). Therefore, Neck pain of secondary school children was fairly high in northern Dhaka city & School bag weight; prolong sitting posture were the responsible factors for neck pain.

Key Words: Neck Pain, Secondary school children, Factors, School bag weight, Body Mass Index

1. INTRODUCTION: Neck pain is a very common problem and two third of the population has the history of neck pain in their life. Numerous causes are responsible for neck pain especially spinal problem. Neck pain arises due to muscle tightness in both side of the neck, upper back and pinching of the nerves emanating from the cervical vertebrae (Binder 2008). The head is supported by the lower neck and upper back. Upper back creates a supportive structure for head to sit on. Carrying School bag should base on children BMI and age. The number of patient was coming to the physician to get treated for their musculoskeletal problem and spinal pain due to heavy school bag carrying (Stefen et al., 2009). There is lot of evidence in the literature which shows that musculoskeletal complains such as neck, shoulder and back pain among school age students due to classroom furniture and excessive load on the spine by school bags (Mayanak et al., 2007).

Evidence showed that musculoskeletal complaints such as neck, shoulder and back pain among school age students are believed to be from multiple and casual factors which are related to static and faulty postures, obesity, psychosomatic factors. A concerning association was found between neck pain & high hours of computing for school students & have confirmed the need to educate school students about appropriate ergonomic & postural health (Smith et al., 2009).

According to the International Classification of Functioning, Disability and Health guidelines by Childs and colleagues, neck pain is classified into 4 types; Neck pain with mobility deficits, neck pain with radiating pain, neck pain with movement coordination impairments and neck pain with headache (Borenstein 2013).

The top three joints in the neck allow for most movements of neck and head. The lower joints in the neck and those of the upper back create a supportive structure for head to sit on. If this supportive system is affected adversely then the muscles in the area will be tightened (Stefan et al., 2009).

There are insufficient article in this area in Bangladesh on my topic. Thus I have selected this topic to find out the current situation in Northern Dhaka city especially to estimate the prevalence of neck pain among secondary school children & to determine the relevant factors that influencing the neck pain. Finding of this study might help to develop preventive measure in addressing this issue.

2. METHODOLOGY:

This Cross- sectional study was conducted at the area of Agargaon, Mohammadpur, Sher-e-Bangla Nagar & Shamoli in Northern Dhaka city. The children of different secondary school in this area were the target people of the study. Purposive sampling technique with consideration of inclusion & exclusion criteria was used in this study where a total 122 secondary school going children of different areas were registered with their informed consent. The study was conducted from April to December 2016. Data was collected by face to face interview by using a semi structured, interviewer administrated questionnaire. The questionnaire was developed to obtain information of the respondents about the following factors like socio demographic factors, information related factors & pain related factors. Data was analyzed by SPSS (version 23.0).

3. RESULT:

Table 1: **Distribution of the respondent by Socio demographic characteristics (n=122)**

Analysis of socio demographic variables & table 1 showed that 11.5%, 60.7%, 27.9% of the respondents belonged to the age group of 9-12 years, 13-16 years, 17-20 years respectively with the mean±SD age of the respondent was 15.54±2.308 years where distribution of boys and girls were nearly same & most of the participants' family monthly income was below 20000BDT.

Variable	Number	Percentage
Age group (in years)		
9-12	14	11.5
13-16	74	60.7
17-20	34	27.9
Mean±SD = 15.54±2.308		
Sex		
Boys	66	54.1
Girls	56	45.9
Family Monthly Income (BDT)		
≤20000	69	56.5
21000-30000	26	21.3
31000-40000	8	6.6
>400000	19	15.6

Table 2: Distribution of the respondent by BMI (n=122)

Revealed that most of the participants had underweight 63.9%, very few of them were obese 1.6%, Healthy & overweight were 27.0% & 7.4% With Mean±SD of the respondent was 18.04±4.212.

BMI	Frequency	Percent
>18.5(Underweight)	78	63.9
18.5-24.9 (Healthy)	33	27.0

25-29.9 (Overweight)	9	7.4
≥30 (Obese)	2	1.6
Mean±SD= 18.04±4.212		

Table 3: Distribution of the respondent by Information related to study (n=122)

Revealed that about 59.8% of the respondent study time was <8 hours, 36.9% respondent was 8-12 hours & 3.3 respondent was >12 hours. On the other hand comfortable sitting position in classroom had 74.6% & around 25.4% of the respondent did not have comfortable.

Variable	Number	Percentage
Study time (hours)		
<8 hours	73	59.8
8-12 hours	45	36.9
>12 hours	4	3.3
Time spend in sitting position		
<10 hours	45	36.9
11-13 hours	44	36.1
≥14 hours	33	27
Comfortable sitting in class room		
Yes	91	74.6
No	31	25.4

Figure: 1 weight of school bag of the respondent:

Revealed that 13.1% of the respondent's school bag weight were < 3 kg, 75.4% were between 3-5kg and 11.5% were >5 Kg.

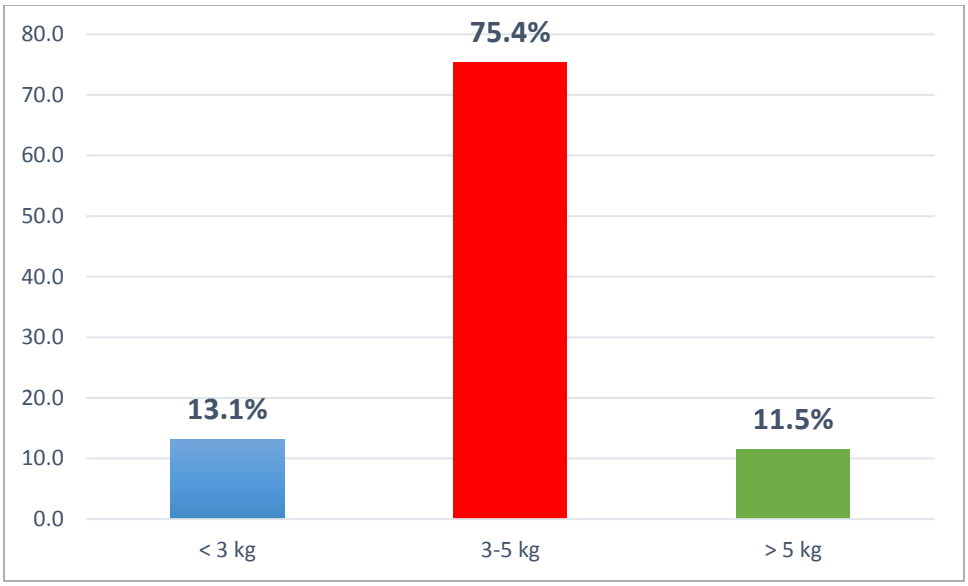

Table 4: Distribution of the respondent by Transportation from home to school (n=122)

Revealed that 74.6% of the respondent was going to school by walking, 10.7% was going to school by rickshaw, 7.4% by school bus and 7.4% by other transportation and about 74.6 of the student school distance from home was ≤1 km & 25.4 was ≥1 km.

Transportation	Number	Percentage
Walking	91	74.6
Rickshaw	13	10.7
School Bus	9	7.4
Others	9	7.4
Distance from home to school	**Number**	**Percentage**
≤ 1 km	91	74.6
≥ 1 km	31	25.4

Table 5: Distribution of the respondent by Using computer & its related variable

Revealed that out of 122 participants, 40.2% of the respondent used computer and 59.8% did not use computer & among 49 of the computer users 12.3% time spend <1 hour, 23.0% time spend between 1to 3 hours and >3 hour time spend in computer use was 5.7%.

Variable	Number	Percentage
Using Computers		
Yes	49	40.2
No	73	59.8
Time Spend in Computer use (n=49)		
Time spent	Frequency	Percent
<1hours	15	30.6
1-3 hours	27	55.1
3> hours	7	14.3

Figure: 2 **Neck pain of the respondent (n=122)**

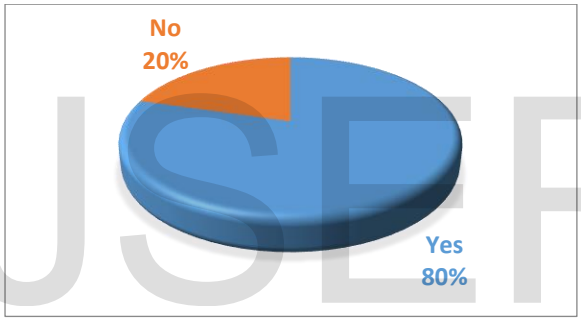

Figure: 2 showed 80% of the students reported from suffering of neck pain & 20 % did not have.

Table 6: Distribution of the respondent by neck pain & its related variable (n=97)

Revealed that among the students pattern of neck pain followed by intermittent were 96.9% & constant were 3.1%. Around 55.7% participants having radiating pain & 44.3% did not have. About 44.3% of the respondent pain increasing time was at morning, 20.6% was at evening & 35.1% was at night.

Variable	Number	Percentage
Pattern of Neck Pain		
Intermittent	94	96.9
Constant	3	3.1
Radiating Neck Pain		

Yes	54	55.7
No	43	44.3
Pain increasing Time		
Morning	43	44.3
Evening	20	20.6
Night	34	35.1

Figure: 3 Severity of pain of the participant

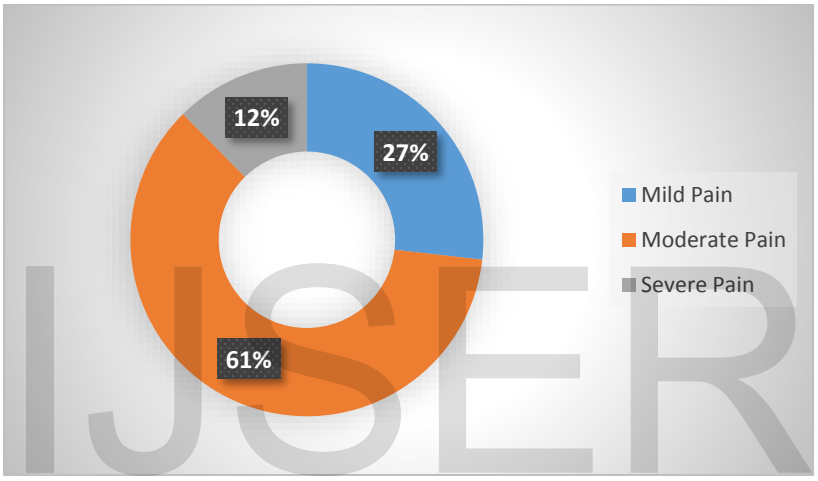

Figure 3 showed that most of the students had moderate pain (60.8%), very few had severe pain (12.4%) & about 26.8% had mild pain.

Table 7: Distribution of the respondent by Parents Concern about pain (n=97) & treatment taken

Table-6 showed that 60.8% of parents concern about their children neck pain & 39.2% did not have any concern & among parents concern 52.5.% children taken treatment & 47.5% did not take any treatment**.**

Parents Concern about pain	Frequency	Percent
Yes	59	60.8
No	38	39.2
Treatment taken (n=59)		
Yes	31	52.5
No	28	47.5

Table 8: Association between variable of interest & neck pain

Variables	Neck Pain		Total	P Value
	Yes n (%)	No n (%)		
Age				
9-12	5 (5.2%)	9(36.0%)	14(11.5%)	
13-16	65(67.0%)	9(36.0%)	74(60.7%)	0.000*
17-20	27(27.8%)	7(28.0%)	34(27.9%)	
Sex				0.507
Boy	51(52.6%)	15(60.0%)	66(54.1%)	
Girl	46(47.4%)	10(40.0%)	56(45.9%)	
BMI				
Underweight	58(59.8%)	20(80.0%)	78(63.9%)	
Healthy	30(30.9%)	3(12.0%)	33(27.0%)	0.218
Overweight	7(7.2%)	2(8.0%)	9(7.4%)	
Obese	2(2.1%)	0(0.0%)	2(1.6%)	
Weight of school Bag				0.045*
< 3 kg	9(9.3%)	7(28.0%)	16(13.1%)	
3-5 kg	76(78.4%)	16(64.0%)	92(75.4%)	
>5 kg	12(12.4%)	2(8.0%)	14(11.5%)	
Transportation				0.287
Walking	69(71.1%	22(88.0%)	91(74.6%)	
Rickshaw	11(11.3%)	2(8.0%)	13(10.7%)	
School bus	8(8.2%)	1(4.0%)	9(7.4%)	
Others	9(9.3%)	0(0.0%)	9(7.4%)	
Study Time (Hours)				0.585
<8 hours	56(57.7%)	17(68.0%)	73(59.8%)	
8-12 hours	38(39.2%)	7(28.0%)	45(36.9%)	

>12 hours	3(3.1%)	1(4.0%)	4(3.3%)	
Time of sitting hours				0.043*
<-10 hours	32(33.0%)	2(52.0%)	45(36.9%)	
11-13 hours	34(35.1%)	10(40.0%)	44(36.1%)	
>-14 hours	31(32.0%)	2(8.0%)	33(27.0%)	

Table 8. Revealed that age, weight of the bag & time of sitting hours of the participants was significantly associated with neck pain (P<0.05), but there was no significant relationship found between sex, BMI, transportation, study hours with neck pain (P>0.05).

4. DISCUSSION:

Neck pain is a common musculoskeletal disorder & much higher in school going children (Raj & Agarwal 2013). Study revealed that 80 % of the respondents were affected by neck pain where boys suffer more with neck pain than girls do, but earlier study (siivola 2003) found that females were more affected with neck pain than males. The age of the participants is an important issue for socio-demographic factor. Highly significant associations were found between neck pain & age. In a previous study, age was significantly associated with developing MSD, especially among adolescent children (sahib 2016). Among the participants, underweight children were greater in percentage of neck pain but Grimner (1999) noted that obesity is the major cause of neck pain which showed the dissimilarities of the current study with the previous one. Participants within the lowest BMI had a higher prevalence of neck pain than those with higher BMI (vivat 2000) which finds the similarity with this study. Most of the participants with neck pain used 3 to 5 kg school bags and higher number of participants used to go to school on foot in this study. Most of the participants of this study did not use computer & among the computer users, who spent 1-3 hours were the highest number of having neck pain but another study (Khan & Faizan 2016) noted that more the duration of computer job, more will be the chance of developing neck pain. Study found that the time of sitting posture is also an important and related factor. The group of respondents who spent 11-13 hours in sitting position is the highest in number of having neck pain. Siivola (2003) stated that young people spending their time passively -like sitting are more frequent to suffer from neck pain. Most of the participants' neck pain was intermittent with radiating character & some parents did not concern about their sufferings & after knowing their children's neck pain some parents did not take any intervention for their children which was very alarming finding in this study. There was significant relation between neck pain & school bag weight (0.045<0.05) which was similar to previous study as Balamurugan (2014) noted that a significant positive association was found between school bag weight & presence of musculoskeletal pain among the children. In this study, significant relationship between neck pain & time of sitting hours was found but no significant association was found between BMI, transportation & time of study hours.

5. CONCLUSION:

It is concluded that secondary school going children showed high prevalence of neck pain. Major factors that are responsible for neck pain were age, school bag weight & prolonged sitting posture. An educational program might be introduced among secondary school children and their parents and teachers for developing awareness on factors to avoid neck pain.

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