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Research Article

Growing Pain Among Bangladeshi Children: Urban and Rural Settings

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Abstract

Vitamin D plays role in regulating cell growth, maintenance of body immunity, healthy musculoskeletal structure and functioning other various biological activities in keeping people healthy. This study was a part of a community based cross sectional study which was conducted among 274 primary school children. Two primary schools were selected purposively (one from Dhaka city and one from Gazipur district). The male and female ratio was equal. The mean age of the students was 8.86 ± 2.035 years. Majority of the children were within 5 – 10 years (73.7%) and rest were within 10 – 14 years. The male and female ratio was equal. Among the participants 28.8% were in class I, 20.1% were in class II, and 16.4% were in class III, 17.9% in class IV and rest 16.8% were in class V. Among the study participants 48.2% were of rural areas and 51.8% were from urban area. Among the participants, 97.0% of the rural areas and 75.4% of the urban areas had growing pain. By pain status of the rural participants, 89.8% reported their pain as mild and 10.2% as moderate while 38.3% of urban participants reported their pain as mild, 60.7% as moderate and 0.9% as severe. Statically significance association was found between residence of the participants with development of growing pain and increasing manner of pain status ($p<0.05$). Among the rural children 60.9% had no scope of regular sun exposure, while among the urban children it is 27.1% ($p<0.05$). Growing pain was reported in increasing manner among those who had scope of sun exposure for 2 hours per day, for 2 – 5 hours and who had no scope of regular sun exposure ($p<0.05$). Prevalence of growing pain and insufficient sun exposure especially among rural school going children in Bangladesh is very high and alarming which needs to explore the root cause.

Keywords: Growing Pain; Children; Urban and Rural Settings; Bangladesh

Introduction

Musculoskeletal pains are the common phenomenon of Growing pains, or recurrent lower limb pains, among 49.4% of children worldwide. The growing pains are found prevailing globally among 3 to 37% children [1,2].

The clinical features of Growing pains are cramping or achy muscle pains [usually in late afternoon or evenings] in both legs that some preschool children often complain. Sometimes children may waken in the middle of the night due to these pains. Growing pains generally observed to be started in early childhood, within

the age of 3 or 4 years and also may attack back within the age of 8-12 years of the victims [3,4]. This pain is generally non-articular, intermittent, bilateral type and not limiting children's mobility [5,6]. Exercise may aggravate the pain and which may last for few minutes to hours. No sign of inflammation on physical examination and laboratory investigation generally detected [7]. Growing pains are generally non-progressive towards any organic disease and usually resolve by adolescence period [8].

Holick mentioned in his articles that deficiency of Vitamin D might be the causes of muscular weakness and muscle pain among children and adults as well [9,10]. Unfortunately, one child cannot receive enough vitamin D from dietary sources alone. Instead, like adults, children must rely on sunshine and supplements to maintain healthy vitamin D levels [11]. In human body, around ninety percent vitamin D generally derived from sunlight and rest from dietetic intake. Both physical and environmental factors may affect individual's exposure to sunlight and thus limit the ability of production of vitamin D endogenously within their body [12]. Deficiency of Vitamin D is now a day's been identified as the evidence of lifestyle disorder in the urban population even after abundant sunlight. They are fail to expose themselves to sunlight due to long school time, lack of physical activities and exercises [13].

This study is an attempt to find out whether there is any association between sunlight exposure and development of growing pain among Bangladeshi children.

Materials and Methods

This study was a part of a community based cross sectional study which was conducted among 274 primary school children during July 2018 to June 2011. Two primary schools were selected purposively (one from Dhaka city and one from Gazipur district). After taking written informed consent from guardians all required data were collected. Socio-demographic information including age, household size, education of parents or caregiver, income, employment of the head of the households and housing condition were recorded.

Determination of growing pain

Site, time and frequency of pain were obtained along with family history of similar pain and the pain relieving methods using questionnaire. Pain severity was evaluated using Visual Analog Scale{VAS}, a linear scale where a score from 0 to 10 is marked according to the severity of pain. Children were asked to mark the severity of pain they experienced during the last attack.

Determination of sun exposure

Sun exposure history was taken by interview whether the study participants stay outside especially when the sunlight is maximum (generally 10 am. to 4 pm). Participants also been asked to record their primary activities during this specific time. Physical activity was evaluated using questionnaire regarding type, frequency, and duration of each exercise. Sun exposure was assessed using questionnaire regarding the duration of exposure.

Results

Among the study participants, male female ratio was equal. The mean age of the study subjects were 8.86 ± 2.035 years. Majority of the children were within 5 – 10 years (73.7%) and rest were within 10 – 14 years. The male and female ratio was equal. Among the participants 28.8% were in class I, 20.1% were in class II, and 16.4% were in class III, 17.9% in class IV and rest 16.8% were in class V. Around 48% study participants were of rural areas.

Characteristics	Frequency (%)
Age group	
5 to 10 years	202 (73.7)
10 to 14 years	72 (26.3)
Mean age	8.86 ± 2.035 years
Sex of subjects	
Male	137(50.0)
Female	37(50.0)
Class	
Class I	79(28.8)
Class II	55(20.1)
Class III	45(16.4)
Class IV	49(17.9)
Class V	46(16.8)
Family Members	
Up to 4 members	148 (54.0)
5 - 6 members	114 (41.6)
More than 6 members	12(4.4)
Mean 4.55**±1.072**	
Locality	
Rural	132(48.2)
Urban	142(51.8)

Table 1: Socio-demographic distribution of subjects (n=274).

Among the mothers of the subjects, 76.3% were housewife while rest were found engaged with individual profession. Among the fathers 26.3% were service holder, 16.8% were engaged with business and rest were found engaged in different profession. The education level of the mothers were found as 16.4% had no institutional education, 44.9% had primary level, 31.4% had secondary level (up to SSC), 4.7% had up to HSC level and 2.6% were graduate. That of father was found as 14.2% had no institutional education, 38.0% had primary level, 37.6% had secondary level (up to SSC), 5.5% had up to HSC level and 4.7% were graduate.

The table 3 shows that 97.0% of the rural participants and 75.4% of the urban participants had growing pain. Of the rural participants who had growing pain, every one complaints of pain in

	Frequency	Percent
Mother's Occupation		
Housewife	209	76.3
Job Holder	24	8.8
Garments Worker	14	5.1
Other	27	9.9
Father's Occupation		
Service holder	72	26.3
Business	46	16.8
Driver	36	13.1
Cleaner	28	10.2
Day labor	23	8.4
Other	69	25.3
Mother's Education		
No education	45	16.4
Primary level	123	44.9
Secondary level (up to SSC)	86	31.4
Up to HSC	13	4.7
Graduate	7	2.6
Father's Education		
No education	39	14.2
Primary level	104	38.0
Secondary level (up to SSC)	103	37.6
Up to HSC	15	5.5
Graduate	13	4.7

Table 2: Distribution of respondents by socio-demographic characteristics.

	Rural	Urban	Test of significant
Growing Pain (n=274)			
Yes	128 (97.0)	107 (75.4)	χ^2=26.188
No	4 (3.0)	35 (24.6)	p=0.000
Pain site (Multiple responses)			
Leg	128 (100.0)	72 (67.9)	
Hand	118 (92.2%)	24 (22.6)	
Elbow	1 (0.8)	5 (4.7)	
Forearm		2 (1.9)	
Thigh		11 (10.4)	
Back of leg		32 (30.2)	
Pain Status			
Mild	115 (89.8)	41 (38.3)	χ^2=274.0
Moderate	13 (10.2)	65 (60.7)	p=0.000
Severe		1 (0.9)	
Measure to relieve the pain			
Yes	20 (15.2)	84 (59.2)	
Measures			
Massaging	20	23	
Medicine		21	
Pain relieving balm		4	

Table 3: Growing pain status of school going children: Rural-Urban Settings.

leg, 92.2% in hand, while among those of urban participants, 67.9% complaints of pain in leg followed by 22.6% in hand, 10.4% in thigh and 30.2% in back of leg. By pain status of the rural participants, 89.8% reported their pain as mild and 10.2% as moderate while 38.3% of urban participants reported their pain as mild, 60.7% as moderate and 0.9% as severe. Among the rural participants 15.2% mentioned that they practiced massaging to get relief of pain while among the urban participants 59.2% one fourth practiced massaging and another fourth took medicine and pain relieving balm. Statically significance association was found between residence of the participants with development of growing pain and increasing manner of pain status ($p<0.05$).

	Rural	Urban	Test of significant
Sun Exposure			
Up to 2 hours	27 (21.1)	39 (36.4)	χ^2=34.925
2 - 5 hours	23 (18.0)	39 (36.4)	p=0.000
No sun exposure	78 (60.9)	29 9 (27.1)	
Sun Exposure Time (Multiple responses)			
7 AM–9 AM	21 (16.4)	51 (57.3)	
10 AM–3 PM	55 (43.0)	41 (46.1)	
3 PM–5 PM	76 (59.4)	37 (41.6)	
5 PM–7 PM	16 (12.5)	28 (31.5)	

Table 4: Sun Exposure of school going children: Rural-Urban Settings.

Table 4 is describing that among the rural children 21.1% were accustomed to sun exposure for 2 hours per day, 18.0% for 2 – 5 hours per day and 60.9% had no scope of regular sun exposure. On the other hand among the urban children, 36.4% were accustomed to sun exposure for 2 hours per day, 36.4% for 2 – 5 hours per day and only 27.1% had no scope of regular sun exposure. Statistically it was found highly significant ($p<0.05$).

By timing of sun exposure it was reported that rural children had the scope of sun exposure during 7 AM–9 AM by 16.4%, 10 AM–3 PM by 43.0%, 3 PM–5 PM by 59.4% and during 5 PM–7 PM by 12.5%. Urban children had the scope of sun exposure during 7 AM–9 AM by 57.3%, 10 AM–3 PM by 46.1%, 3 PM–5 PM by 41.6% and during 5 PM–7 PM by 31.5%.

Growing pain	Sun Exposure			Test of significant
	Up to 2 hours	2 - 5 hours	No sun exposure	
Yes	66 (86.8)	62 (73.8)	107 (93.9)	χ^2= 16.026p=0.000
No	10 (13.2)	22 (26.2)	7 (6.1)	

Table 5: Association between developing of growing pain and sun exposure among the participants.

Growing pain was reported in increasing manner among those who had scope of sun exposure for 2 hours per day (86.8%), who had scope of sun exposure for 2 – 5 hours per day (73.8%) and who had had no scope of regular sun exposure (93.9%). Statistically it was found highly significant ($p<0.05$).

Discussion

The study was conducted among the primary school students of rural and urban settings. This current study included a total 274 children of whom 132 were from rural area and 142 were from urban area with equal male female ratio. Among the subjects, seventy four percent were in the age group of 5 to 10 years age followed by twenty six percent were in the age group of 10 to 14 years of age with mean 8.86 ± 2.035 years. Among the mothers of the subjects, seventy six percent were housewife while rest were found engaged with individual profession. Among the fathers more than one-fourth were service holder, seventeen percent were engaged with business and rest were found engaged in different profession. The education level of the mothers, around sixteen percent had no institutional education, forty five percent had primary level, and thirty one percent had secondary level (up to SSC) of education. And that among the father, fourteen percent had no institutional education, thirty eight percent had primary level, around same percent had secondary level (up to SSC) education.

This study revealed that 97.0% of the rural participants and 75.4% of the urban participants had growing pain. The most common sites of growing pain was leg followed by in hand. By pain status, among the rural participants, 89.8% reported their pain as mild and 10.2% as moderate while among the urban participants 38.3% reported their pain as mild, 60.7% as moderate and 0.9% as severe. Among the rural participants 15.2% mentioned that they practiced massaging to get relief of pain while among the urban participants 59.2% either practiced massaging or medicine and pain relieving balm.

Growing pain was reported in increasing manner among those who had scope of sun exposure for 2 hours per day, for 2 – 5 hours per day and who had had no scope of regular sun exposure.

There is no general guidelines on the amount of sun exposure needed to maintain adequate vitamin D levels in body. But adequate sun exposure between 10 AM and 3 PM to the face, arms, legs, or back without sunscreen is suggested by some scientists for sufficient vitamin D synthesis. This study interestingly found that a major portion of rural children (60.9%) had no scope of regular sun exposure which was 27.1% among urban children. Sun exposure during 3 PM–5 PM was reported by 43.0%, rural and 43.0% urban children. Studies conducted in Jeddah, Saudi Arabia [14] and Malaysia [15] found that due to hot and humid weather school going children have to stay indoor most of the time and loss scope of adequate sun exposure. Increasing internet based recreation may be one cause of less sun exposure by school going children in Bangladesh instead of physical exercise and playing in open ground field.

Conclusion

The prevalence of growing pain and insufficient exposure to sunlight especially among rural school going children in Bangladesh is very high and alarming which needs to explore the root cause. Promotion of healthier lifestyle involving regular outdoor physical activity may improve the situation.

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Disclosure

Authors declare that they have no conflict of interest.

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