



Influence of gender on choice of postural deformities

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Abstract

The present study was conducted for assessing the influence of gender on choice of postural deformities. For that total eight hundred twelve male and female [400 boys and 412 girls] school going children were selected from rural area of Howrah district West Bengal. Their age ranged from 10 to 13 years. Selected postural deformities were Flat Foot, Knock Knee, Bow Leg as lower extremity deformities and Kyphosis, Lordosis, and Scoliosis as spinal cord deformities. Result of the study revealed that girls were more posturally deformed than boys. It was also found that there was significant association between gender and choice of deformities and more number of girls was the sufferer on the influence of deformities.

Keywords: flat foot, knock-knee, bow-leg, kyphosis, lordosis, scoliosis

1. Introduction

Human life begins with the union of two germ cells that preliminary produce a zygote. One day this tiny zygote becomes a complete child then this child detached from the mother's body. Before that period though the child's growth is too unique, distinctive, and individual but all the same, and the process of the development follows more or less a general sequence. At this stage, child has undeveloped muscle fibers but their organs start adapting to the new situations of life and the outer environment. At the time of infancy, about two years before, pattern of growth is similar for all. But from this stage a differentiation is seeing in length of the children. Generally, male babies a little longer than female babies. With the various stages of growth and development they become an adult male and an adult female. During the period between the infancy and adulthood many physical and physiological changes takes place. The first drastic shock comes at the stage of puberty when primary sex characteristics are developed. From the stage of puberty physical and physiological upheavals that rock the pre-adolescent children, affect their attitude and aptitude. At this stage growth curve marked variations in body-built, physiological capacities, and psychological characteristics. The rapid change in structure may cause a little awkwardness in the child's appearance and affect the rate of improvement in his/her motor abilities. At this stage boys become more aggressive and dominating than girls. After this stage, during adolescent period boys look taller and girls heavier. Stockiness of bones becoming much more marked in boys than in girls. Muscles are also growing more rapidly and more markedly in boys than in girls.

If we see mature male and female, we can realize the differentiations between them. Generally, females are 3 to 5 inches shorter in height than males, lean body weight

[muscles, bone and organs] is lighter than in female than male. A mature male will have broader shoulders, narrow hips and a broader chest. The average female, on the basis of somatotype, tends more towards endomorphy or fatness. It is also well recognized that average male is considerably stronger than average female though the strength relative to muscle size is the same for the male and the female. After ten to twelve year's age, a boy possesses greater muscular and cardiovascular endurance. There is also a differentiation between boys and girls in skeletal alignment.

From every corner of our life path we can see a differentiation between the boys and girls. So, the investigator wants to find out any difference if exist between boys and girls in choice of deformity. Hypothesis of the study was that there was no any significant difference between the boys and girls in choice of deformities.

2. Materials and methods

The subjects of the present study were eight hundred twelve (N=812) boys and girls school students [400 boys and 412 girls] selected from rural area of Howrah district. Their age ranged from 10 to 13 years. All the subjects of boys and girls were classified separately into seven postural groups viz- Normal Posture group (NP), kyphotic Posture group(KP), lordotic posture group(LP), Scoliotic Posture Group(SP) bowleg group(BP), knock knee group(KK), flatfoot group(FF). Kyphosis and lordosis were measured by using wall test method. Scoliosis was measured by plumb line test. Bow leg was measured by measuring the distance between femoral condyles in centimeters. Knock Knee was measured by measuring the distance in centimeters between the malleoli and flat foot was measured by using School's Pedograph. Descriptive statistic was used to analyze the collected data.

Table 1: Personal profile of the boys

Sub groups OF BOYS	Age (year)		Height (cm)		Weight (kg)	
	Mean	SD	Mean	SD	Mean	SD
BNP	12.45	1.29	1.41	0.09	30.50	6.53
BFF	12.04	1.18	1.38	0.06	30.96	7.32
BKK	12.03	1.26	1.41	0.08	35.39	9.03
BBL	12.52	1.21	1.42	0.13	31.48	8.71
BKP	12.29	1.29	1.40	0.08	30.54	8.27
BLP	12.49	1.28	1.41	0.09	31.86	8.00
BSP	12.23	1.17	1.37	0.09	27.75	5.49

Table 2: Personal Profile of Girls

Sub groups of GIRLS	Age (year)		Height (cm)		Weight (kg)	
	Mean	SD	Mean	SD	Mean	SD
GNP	12.22	1.28	1.41	0.09	31.27	7.05
GFF	12.10	1.32	1.40	0.08	32.87	8.09
GKK	12.45	1.27	1.41	0.08	35.74	9.77
GBL	12.65	1.26	1.44	0.07	33.15	6.62
GKP	12.41	1.28	1.41	0.09	32.41	8.08
GLP	12.24	1.28	1.39	0.09	30.68	6.04
GSP	12.29	1.38	1.38	0.08	29.14	6.84

3. Result and Discussion

Table 3: Number and percentage of various postural groups of boys and girls.

Groups	Girls		Boys	
	No	Percentage	No	percentage
NP	168	40.776%	182	45.5%
FF	52	12.62%	26	6.5%
KK	51	12.378%	38	9.5%
BL	26	6.31%	21	5.25%
KP	74	17.96%	68	17%
LP	34	8.25%	59	14.75%
SP	7	1.70%	6	1.5%
Total	412		400	

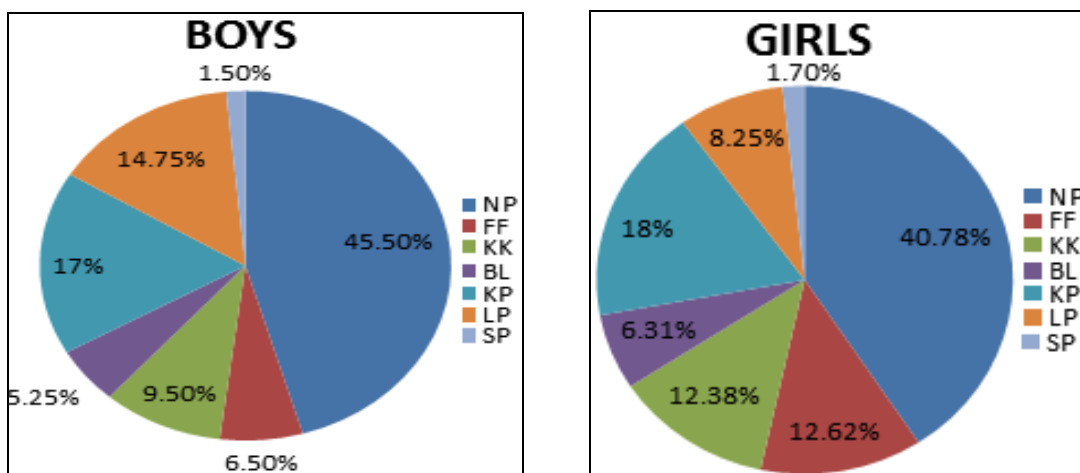


Fig 1: Graphical representation of percentage of various postural forms of boys and girls

Table 3: Contingency table

Group	NP	FF	KK	BL	KP	LP	SP	Total
Boys	182	26	38	21	68	59	6	400
Girls	168	52	51	26	74	34	7	412
Total	350	78	89	47	142	93	13	812

CHISQUIRE VALUE= 18.53243, df= 6 Table value= 12.59 (5%), 16.81(1%)

From table 3 it was found that girls were more posturally deformed (59.22%) than boys (54.5%). In case of incidence of flatfoot deformity girls were more affected (12.62%) than boys (6.5%). In case of knock knee, bowleg, kyphosis and scoliosis girls were more pretended. Boys (14.75%) were more affected in the incidence of lordosis than girls (8.25%). Though, Preeti Sharma (2013), studied with 1200 school children (675 male, and 525 female) of 10 to 15 years old from different regions of Himachal Pradesh and she found male children (85.18%) were more posturally deformed than female children (78.29%).

But, Isabeau Van Biljon (2007) [3] studied with the prevalence of posture deformities among black African school children and found that incidence of posture deformities was higher in girls (54%) than boys (46%). Present study also revealed that percentage of incidence of posture deformities of girls (59.22%) was higher than the percentage of posture deformities of boys (54.5%).

Britnell *et al.* (2005) [4] found that idiopathic structural scoliosis is much more common in females than males. The present also revealed the same scenario of percentage of deformities i.e. more number of females (1.70%) was affected by the incidence of scoliosis than boys (1.50%). So, the present study was close proximity to the other studies.

Chi-square

From table 4 it was found that calculated value of chi-square was 18.53243, at $df=6$, where table value= 12.59 (5%), 16.81(1%) at $df=6$. So, the calculated value of chi-square to be taken as significant at both 0.05 and 0.01 levels. Consequently it can be said that the choice of the deformity is quite dependent up on sex i.e. postural deformities was related to gender. Analyzing this result it may be concluded that null-hypotheses may be rejected in relation to gender and incidence of deformities. Isabeau Van Biljon (2007) [3] studied on prevalence of posture deformities among black African school children and found gender difference in the prevalence of posture deformities. The present study was too closed to the previous one.

4. Conclusions

1. Over all incidences of postural deformity were higher in girls than in boys.
2. Prevalence of posture deformities like- Scoliosis, kyphosis, knock-knee, bow-leg, and flat-foot were higher in girls.
3. Incidence of lordosis was higher in boys than the girls.
4. There was a significant relationship between choice of deformities and gender.

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