



Association Between Body Mass Index, Flat Foot And Knock-Knee Of Physical Education Students Of Guru Ghasidas Vishwavidyalaya, Bilaspur Chhattisgarh

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Abstract

Objective: The purpose of this study was to assess the association between body mass index, flat foot and knock-knee of physical education students of Guru Ghasidas Vishwavidyalaya, Bilaspur Chhattisgarh.

Methodology: The sample consisted of 125 university students, in the age category of 20 – 26 Years.

Measurement: - BMI: for taken the weight of the student electronic weight machine was use weight in kilogram,

Height: for taken the height of the student's measure by stadiometer in centimetre.

Flatfoot: calculated by manually. Foot print taken on the paper, where as foot print divided into three sections A, B & C, and then the widest part of the foot divided by the narrowest part of the foot.

Knock-knee: for identify the knock-knee stand naturally with bare legs together. If there is knocking kneed, the knees should rotate slightly inwards until they touch, with the ankles separated.

Statistical analysis: To find out the association between the BMI flatfoot and knock-knee Pearson correlation employed. The level of significant was set at 0.01.

Result and discussion: The result showed a significant difference between the BMI and flatfoot and no significance difference with knock-knee among the physical education students of Guru Ghasidas Vishwavidyalaya, bilaspur Chhattisgarh.

Keywords: Body mass index, flatfoot, knock-knee.

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INTRODUCTION

Human body is an automotive machine, because of which it is considered special species in the world. Most type of species has sensory organs eyes, leg, hands, ears, body structure. But no matter how they develop their

physic and their body mechanism. When concern it with the human body so they should have a perfect development, and development depend on both nature and nurture. Heredity plays an important role in the development of individuals.

Body weight may define the excessive weight or deposition of adipose tissues in the body. It is the serious medical condition which leads many health related problems such as cardiovascular diseases, or body deformities excess body weight may leads to knock-knee (Genu valgum), or it's may cause any other deformity such as flat foot (Pes planus). These deformities may inter-relate to each other. The lower extremity of the human body is a complex structure of 62 bones and more than 100 muscles tendons and ligaments all of which work together to provide support balance and mobility. Knock-knee medically known as Genu valgum can be explained as the condition in which a person stands upright or straight medial of the knees over lapping each other. This condition may arise due to the weakness of leg the muscles, and excess body weight or some diseases rickets in children osteomalacia in adult and impheima etc. This condition one of the most causes of flat foot. Flat foot medically known as Pes Planus, can be explained as the very low arch and non-existent arch which makes the foot flattened. Due to the flattened foot the entire sole rests upon the ground. This problem occurs when the tendons that binds the foot together becomes loose. These tendons should tighten as the grows, helping to form the medial longitudinal foot arch. Flat feet common in the children but it's disappear with the development of the children. Flat foot may cause of the back pain, impair the walking ability etc. The human body perhaps confront many deformities in life; it can exist from birth, or due to some diseases. These deformities influence the alignment of the body joint motion, gait, and put more stress on the joints of the body when involving in any kind of physical activity. Some deformities are can lead other deformities. As obesity may lead flat-foot, knock-knee etc. This result showed that there was a significant relationship between body mass index and flat feet ($p=0.000$). Obesity is a risk factor for flat foot. The result of this study are in accordance with Micklelet al, (2006), which showed a significant relationship between BMI and flat feet ($p=0.03$). in addition, this study is also in accordance with the research of Pfeiffer, et al. (2006), Which stated that there was significant difference in flat feet prevalence among children who were overweight (51%), obese (62%), and normal weight (42%) with observations ($p<0.05$) [9].some studies that found the prevalence of genu valgum was 87% among overweight children of both sexes aged 5 to 9 years (Martinelli et al.2011)

Objective of the study:

To assess the Association between body mass index, flat foot and knock-knee of physical education students of Bilaspur, Chhattisgarh.

METHOD AND MATERIALS:

I. Selection of subjects:

This study was conducted in Guru Ghasidas Viswavidyalaya Bilaspur, Chhattisgarh. With 125 participants who was students of same university of B.P.Ed II, B.P.Ed IV and M.P.Ed II semester male and female. Convenient sampling was followed for the study. The age range between 20 to 26 Years.

II. Section of variables:

➤ **Body Mass Index (BMI):**

WEIGHT = for taken the weight of the student electronic weighing machine was used (weight in kilogram).

HEIGHT= for taken the height of the students stadiometer was used (height in Centimetre).

➤ **Flat Foot:**

Chippaux-Smirak Index (CSI): Each Student asks to deep the both feet into the foot tray containing black ink. Then asked walk over the white paper. Using foot print method a foot axis was drawn from the centre of the heel to the tip of the second toe and the foot print will be divided into equal three parts.

Arch index, calculated manually. Foot print taken on the paper, whereas foot print divided into three sections A, B & C, then the widest part of the foot divided by the narrowest part of the foot.

➤ **Knock Knee:**

To identify the knock-knee stand naturally with bare legs together. If there is knocking kneed, the knees should rotate slightly inwards until they touch, with the ankles separately.

III. Statistical analysis

For determining the association of BMI with flatfoot, knock-knee, descriptive statistics and product moment correlation was used, the data analyzed with the help of SPSS (16.0 version) software and the level of significance was set at 0.01 level of confidence.

RESULT AND FINDINGS OF THE STUDY:**Table – 1** Descriptive Statistics of BMI, flatfoot and knock-knee of physical education students of Guru Ghasidas Vishwavidyalaya, bilaspur

VARIABLES	MEAN	S.D.	N
BMI	2.0960	.42925	125
Flat Foot	1.2000	.40161	125
Knock knee	1.0800	.27238	125

Table – 2 Correlations of BMI, flatfoot and knock-knee of physical education students of Guru Ghasidas Vishwavidyalaya, bilaspur

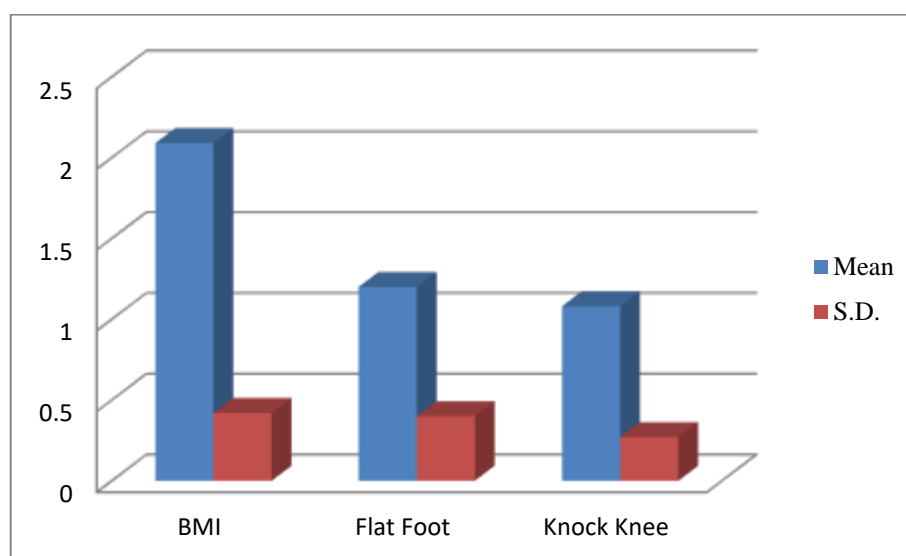
VARIABLES	BMI	FLATFOOT	KNOCK-KNEE
BMI	1	.496**	.141
		.000	.118
	125	125	125
Flat Foot	.496**	1	.147
	.000		.101
	125	125	125
Knock knee	.141	.147	1
	.118	.101	

TABLE -1 show that the descriptive statistics i.e. mean and SD of selected variables are i.e. BMI ($2.0960 \pm .42925$), flatfoot ($1.2000 \pm .40161$) and knock-knee ($1.0800 \pm .27238$).

TABLE-2 show that there is significant difference found between BMI ($p=.000$) with flat foot ($p=.000$) and no significance difference with knock-knee ($p=.118$) as the p-value were less than 0.01.

Graph

Graphical Representation of BMI, flatfoot and knock-knee of physical education students of Guru Ghasidas Vishwavidyalaya bilaspur

**DISCUSSION AND CONCLUSION:**

The results found in the present study showed that there was a significant association of BMI with flat foot and knock-knee. The result of this study were supported by some authors, obese adolescents have been shown to

present localized orthopedic alterations, particularly in the lower limbs, such as genu valgum. This study reveals that there is a positive association between BMI, Flat foot and Knock-knee. Significant difference was found between the BMI and flatfoot and in the case of knock-knee. No significant difference was shown between BMI and knock-knee. The mean who are overweight have more chances to flat foot in comparison to normal person and no relationship between BMI and flat foot in relation to knock-knee.

REFERENCES:

1. Abolarin, & et.al, (2011), Relationship between selected anthropometric variables and prevalence of flatfoot among urban and rural school children in south west Nigeria. *Nigerian Quarterly Journal of Hospital Medicine*. 21(2), 135-40.
2. Echarriet. & et.al. (2003), The development in footprint morphology in 1851 Congolese children from urban and rural areas, and the relationship between this and wearing shoes, *Journal of Pediatric Orthopaedics* , 12(2), 141-146.
3. Bruce Jones, (1990). Flat Foot Nonsense, *Reader's Digest*, 137-142.
4. D.C. Mckenzie, (1985), *International Journal of Applied Medicine and Science in Sports and Exercise*, 334.
5. Giladi M, et al. (1985), et al. The low arch, a protective factor in stress fractures, 14:709-712.
6. Dahle L.K, (1991), Visual assessment of foot type and relationship of foot type to lower extremity injury. *J Orthop Sports Phys Ther*, 14:70-74.
7. Mickle K.J., (2006), The Feet Overweight and Obese Young Children: Are They Flat or Fat? *Obesity* 14 1949-53.
8. Pfeiffer R, et al. (2006), Prevalence of Flat Foot in Preschool-Aged Children *Pediatrics* 118 634-9.
9. Martinelli AR, et al. Analisedo alinhamento dos Bras Cineantropom *Desempenho Hum*. 2011; 13(2), 124-30.