



PREVALENCE OF GENU VALGUM IN VARIOUS GRADES OBESE INDIVIDUALS.

Premasagar L. Dhane

Final year, Faculty of physiotherapy, Krishna institute of medical sciences deemed to be university, Karad, Maharashtra, India.

Dr. G. Varadhranjulu*

Dean/HOD, Department of NeuroSciences, Faculty of physiotherapy, Krishna institute of medical sciences deemed to be university, Karad, Maharashtra, India *Corresponding Author

ABSTRACT

Background: Genu valgum is a deformity resulting from the separation of ankle when are in medial forces of the person is in anatomical position the patella and the hallux turning to the anterior direction it is also know. Obesity is a condition of abnormal or excessive fat accumulation in adipose tissue to the extent that health is impaired. Obesity might create biomechanical alteration in the weight bearing joints of lower extremities.

Objectives: Objectives of the study were to find out genu valgum deformity in grade 1, 2 and 3 obesity.

Material and methods: In this observational study, 60 subjects were assessed using radiograph and 'Q' Angle.

Results: Statistical analysis of 'Q' Angle were found to be extremely significant with Q value 21.95 ± 2.22 .

Conclusion: The study concluded that Q Angle were significantly reduced in graded obese individuals especially in grade 3 obese individuals.

KEYWORDS : Genu valgum, graded obesity, radiograph and Q angle.

INTRODUCTION

Obesity is defined as a condition of abnormal or excessive fat accumulation in adipose tissue to the extent that health is impaired Obesity is measured on the basis of body mass index {BMI}.

$$\text{BMI} = \text{weight}/(\text{height})^2$$

Classification

< 18.5 =underweight

18.5-24.5=normal

25.0-29.9=overweight

30-34.9=grade 1 obesity

35.0-39.9=grade 2 obesity

>40= grade 3 obesity

Obesity might create biomechanical alteration in the weight bearing joints of lower extremities.

Genu valgum is a deformity resulting from the separation of ankle when are in medial forces of the person is in anatomical position the patella and the hallux turning to the anterior direction it is also know.

Obesity increases overall loading of knee, limb misalignment concentrates that loading bon a local area, to a level at which cartilage damage may occur.

According to calves, obesity causes mechanical overload to the loco motor system , postural misalignment with anterior centre of mass, thus leading to feet functional alteration and an increase in mechanical needs to adopt to the new body scheme May give rise to certain major and minor problems that have considerable impact on quality of life and some may reduce life expectance Obesity is associated with load range of diseases and health complications such as musculoskeletal pain and OA Bone malformation from rickets a diseases caused due to lack of vit D and calcium.

1. Other bone diseases

2. Arthritis in your knee

Change in body congregation that may affect the physical activities may play role in orthopaedic disorder such as genu valgum and genu velum and cowries consumption and led to development of obesity The action body weight on feet make the middle longitudinal arch tends to fall assuming a pronated or valgus foot posture In order compensate tibia

happiness to rotate internally and consequently there is knee compression and middle compartment wear as well as internal rotation of hip which contribute to a greater region in knee valgus and misalignment of extensor of system so, this is the study been conducted to find the prevalence of genu velum in obese individual Genu valgum or knock knee is the deformity resulting from separation when the middle surface of knee are contact while the position is in anatomical, the patella and hallux turning to the anterior direction Angle and type of deviation can be either normal or physiological depending on age.

Person with genu velum deformities are typically unable to touch the feet together while simultaneously strength the legs Valgus deformities can cause dysfunction of lower limb with consequence in daily activities including waling ,sitting ,and rising going up and down the stairs Causes of genu valgum · Obesity(which puts intra pressure on knee)

- Injury or infection to knee or leg
- Malformation of rickets a diseases causes by lack vit D and calcium
- Other bone diseases
- Arthritis in your knee
- Lack of vit D and calcium

AIM AND OBJECTIVES

Aim: To find the prevalence of genu valgum in various grades obese individual.

Objectives:

1. To find out individual with grade 2 and 3 obesity
2. To find out genu valgum deformity in grade 1, 2 and 3 obesity
3. To compare the severity of genu valgum in grade 1, 2 and 3 obesity

MATERIALS AND METHODOLOGY:

MATERIALS USED

- Consent form
- Data collection sheet
- Radiograph
- Weight machine

METHODOLOGY

Study Type: Observation

Study Design: Survey

Place of Study: Karad

Sampling Method: Convenient sampling

Sample Size: $n = 4pq / L^2$

Total number of subjects in study $n = 60$

INCLUSION CRITERIA

- Subjects willing to participate.
- Subjects between age group: 18 to 32 years.
- Subjects who is classified as grade 1, 2 and 3 obese in BMI classifications
- Both male and female willing to participate.

EXCLUSION CRITERIA

- Individual having fracture of lower extremity
- Underweight

OUTCOME MEASURES

- Radiograph

Procedure :

Subjects who will be fulfilling the inclusion criteria will be selected.

To these selected subjects complete procedure of the study will be explained.

Then the following information will be taken like date of birth, school name, grade, age, gender, height and weight.

Weight we will measure in light clothes and without shoes and height we will be checking by measuring tape, which will be fixed to the wall. The subject will be standing with heels, buttocks shoulders and occiput touching the vertical tape. The head will be held erect with the external auditory and the lower border of the orbit in one horizontal plane.

And then with the help of BMI calculator we will classify the subjects into obesity groups.

- Now to assess genu valgus, we will tell the subjects to stand, with patella facing forward, the distance between the intermalleolar will be measured for assessment.
- If the distance is less than 10 cm no radiological evaluation will be needed but if the distance is more than 10 cm investigation will be done.
- The radiographic will be taken and genu valgum deformity will be ruled out.
- The patients will be given a complete outline about the procedure.
- The patients will be the supine position with knee extended then we will draw a line from ASIS to midpoint of patella and then from the midpoint to the tibial tubercle .the angle will be formed .this angle is Q angle .we will then measure this Q angle

STATISTICAL ANALYSIS:

Statistical analysis was done manually and by using the statistics software INSTAT so as to verify the results derived. The statistical analysis of PFT and PEFr was done by 't' test.

Gender Distribution.

GENDER	TOTAL
Male	28
Female	32

A total of 60 subjects were taken for the study. Out of 60 subjects 28 were male and 32 were female.

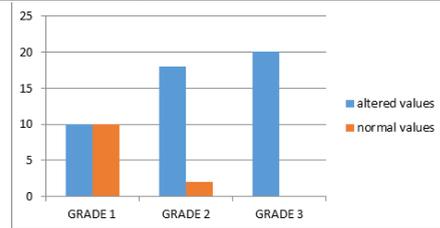
Age Distribution

AGE	TOTAL
18-22	35
23-27	16
28-32	9

Age group of all patients ranged between 18-32 years were taken where, 35 were in the range of 18-22, 16 were in the range of 23-27 and remaining 9 were in the range of 28-32.

CORRELATION OF OBESITY AND 'Q' ANGLE.

	BMI	Q ANGLE
MEAN	34.36±5.83	21.95 ± 2.22
P value	0.0002	<0.0001
Remark	NOT Significant	Significant

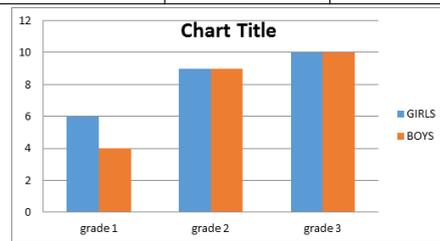


Result of Q ANGLE

Q ANGLE	Normal	ALTERED
	12	48

Q ANGLE ALTERATION IN FEMALE AND MALE

TYPE OF OBESITY	GIRLS	BOYS
1	6	4
2	8	8
3	10	10



Mean of female age was 8 and male is 7.33 with P value of 0.4226 which is considered not significant. Therefore it showed that both the genders equally susceptible for deformity.

RESULTS

The study shows that there is high alteration especially in Grade 3 obese individuals. There is statistically significant difference with respect to mean value of Q VALUE is 21.95 ± 2.22. There was significant reduction in Q ANGLE with grade 3 obesity.

DISCUSSION

This project was done in 3 months with sample size 60.

This research was undertaken with the aim to find out the prevalence of genu valgum in graded individuals in Karad.

There are significant alterations in the knee kinematics and Q angulations in this study. Alterations in Q angle are weight related. Causes of altered Q angle are:

- Increase in excess weight (improper BMI)
- Awkward, extreme, sustained postures of the body.
- Reduced outdoor activities
- Sedentary life style

Girls were showing majority in increase in the angulations due to anatomical differences like pelvis. In this study there is a high prevalence of among individuals with heavy Body mass index. The study shows that there is high alteration especially in Grade 3 obese individuals. There is statistically significant difference with respect to mean value of Q VALUE is 21.95 ± 2.22. There was significant reduction in Q ANGLE with grade 3 obesity.

It was also shown that male and female both the genders had equal chances of having genu valgum or increased alteration with the Mean of female was 8 and male is 7.33 with P value of 0.4226 which is considered not significant. Therefore it showed that both the genders equally susceptible for deformity.

CONCLUSION:

Q angle in grade one obese individuals was mean of 20.76 degree including both male and female. Q angle in grade 2 obese individuals was mean of 22.05 degree including both male and female as well and grade 3 was having highest mean of 23.15 degree. Therefore it was concluded that weight plays an major role in altering the knee kinematics as it is main weight bearing joint of the body.

Grade 3 obese people showed highest prevalence of genuvalgum.

CONFLICT OF INTEREST: There is no conflict of interest concerning the content of the study.

SOURCE OF FUNDING: This study was self funded.

ETHICAL CLEARANCE: The study was approved by the institutional ethics committee of KIMSDU.

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