Vol.9 No.8:8477

# Study the Prevalence of Attached and Detached Earlobes in Human Population of District Gilgit, Gilgit-Baltistan, Pakistan

# Iftikhar Hussain<sup>1\*</sup>, Bahreen Iftikhar<sup>1</sup>

<sup>1</sup>Department of Biological Sciences Karakorum International University Gilgit, Pakistan

\*Corresponding author: Iftikhar Hussain, Department of Biological Sciences Karakorum International University Gilgit, Pakistan; Tel: 9234591280, Email: Ifti14561@gmail.com

Received date: May 14, 2021; Accepted date: September 04, 2021; Published date: September 14, 2021

**Citation**: Hussain I (2021) Study the Prevalence of Attached and Detached Earlobes in Human Population of District Gilgit, Gilgit-Baltistan, Pakistan. Ann Bio Sci Vol.09 No.08.

## ABSTRACT

Earlobe attachment were investigated in both targeted areas Gilgit 292 (49.32%) and Danyore 300(50.67%) out of 592 males were 285 (48.1%) with earlobes attachment 64 (23.5%) detachment of earlobes 221 (77.5) and females 307 (51.8%) with earlobe attachment were 65 (21.7) and detachment of earlobes were 242 (78.8%). In population of Gilgit 75 (25.68%) were found attached earlobe while 217 (74.3%) were found detached earlobe. In Danyore village 54 (18%) population were found attached earlobe while 246 (82%) were found detached earlobes.

#### INTRODUCTION

The Gilgit Baltistan spans an area of 72,496 square kilometers, bordering China, Afghanistan, AJK and India. Gilgit Baltistan is connection of three greatest mountain ranges of the world, the Karakorum, the Hindukush and the Himalayas. As a result of its politically sensitive location, the Gilgit Baltistan has been accorded special territorial status and the area was administered directly by the Federal Government, through the "Ministry of Kashmir affairs & Northern Areas (Gilgit Baltistan).

Gilgit-Baltistan is divided into ten Districts: Gilgit, Baltistan, Diamer, Astore, Ghezir, Ghanche, Hunza, Nagar, Karmaah and Shigar. The whole administrative headquarter is located in Gilgit City. The recent population census (1998) estimated that there were just over 870,000 people in the Gilgit Baltistan. Despite the growth of the Gilgit-Baltistan urban areas, the population remains overwhelmingly rural. The annual population growth rate is estimated to be 2.47 percent.(Government of Pakistan and IUCN, 2003)

#### EARLOBES

Physical traits are observable characteristics determined by specific segments of DNA called genes. Multiple genes are grouped together to form chromosomes, which reside in the nucleus of the cell. Every cell in an individual's body contains two copies of each gene. This original genetic material is copied each time a cell divides so that all cells contain the same DNA. Genes store the information needed for the cell to assemble proteins, which eventually yield specific physical traits.

Earlobe also known as lobules auricular is the soft fleshy lower part found at the base of the external ear. It is the only part of the auricle not supported by cartilage. It is composed of the tough areola and adipose (fatty) connective tissues lacking the firmness and elasticity of the rest of the pinna. Earlobes average about 2cm long and elongate slightly with age. It is either directly attached to the lateral side of head or detached hanging freely away from the lateral side of head. The detached type is slightly bigger than the attached earlobe. This variation in attachment of earlobe is a trait that is inherited from parents and its inheritance follows a pattern.(Ordu et al., 2014).

Human earlobes may broadly be classified into two types, free and attached. This is most common that when we want to see phenotypic different genetic characters like earlobes in population of Gilgit, we may came to know the two different genetic traits like some population have attached earlobes and some have separate earlobes.

Some scientists have reported that this trait is due to a single gene for which unattached earlobes is dominant and attached earlobes is recessive, while other scientists have reported that this genetic phenotypic trait is probably due to several genes. The size and appearance of the lobes are also inherited traits

In a large population, if we have two possible genes for earlobes, either attached or unattached, and if the attached only shows when there are two of them, what are the chances of a person having attached earlobes? Here are the possible combinations: AA, Aa, aA, or aa. In the first case, the gene given by each parent to the child is a (A). In the second case, the mother gives the child a (A) and the father gives the child a (a). In the third case, the father gives the child a (A), while the mother provides a (a). In the fourth case, both parents provide a (a). Therefore, the chances of getting a (AA), (Aa) or (aA) are .75 or 75%, while the chances of getting a (aa) are only .25 or 25%.

#### MATERIALS AND METHODS

To study earlobe attachment in the population, observations on university students and as well as city wise was made. Observation within population was recorded either attached earlobes (recessive trait) or free earlobes (dominant trait) at the

Annals of Biological Sciences

Vol.9 No.8:8477

point of attachment to cheek on right and left side described by Miller et al.,(2014).In this important phenotypic genetic study we find the relationship of attached and detached earlobes with gender and location.



Figure A: Identification of Attached Earlobe in Sample.



Figure B: Attached Earlobe.



Figure C: Attached Earlobe in Female.



Figure D: Attached Earlobe in Female.



Figure E: Detached Earlobe Sample.



Figure F: Detached Earlobe Sample.

## RESULTS

S.No.	Attached Earlobes	Detached Earlobes	Total
1	129(21%)	463(79%)	592

**Table 1:** Overall Attached Earlobe and Detached Earlobes inthe Human Population of Gilgit.

In the present study the Human Earlobes was studied in the human Population of Gilgit and found that 129 individuals were having Attached Earlobes and 463 was having Detached Earlobes out of the total of 592.



**Figure.1:** Attached Earlobes and Detached Earlobes in the Human Population of Gilgit.

The result indicates that the attached and detached earlobes were 129 and 463 individuals with attached and detached earlobes out of 592.

No. Of Individuals	Attached	Detached	Total
Males	64(22.4%)	221(77.5%)	285

Annals of Biological Sciences

with Gender.

Vol.9 No.8:8477

Females	65(21.7)	242(78.8%)	307
Total	129 (21%)	463(79%)	592

**Table 2:** Percentages of Attached and Detached Earlobes inthe Human Population.

In the present investigation both attached and detached earlobes were comparatively studied and results found to be 129 and 463 individuals with attached and detached earlobes out of 592 making 21% and 79% of each. Among the females, attached and detached individuals were 65 and 242 whereas among male, 64 and 221 attached and detached earlobes were recorded.

Earlobes * Gender Crosstabulation						
Count	Count Gender					
		Male	Female			
Earlobes	Attached	64	65	129		
	Detached	221	242	463		
Total		285	307	592		

Table 3: Cross Tab Analysis of Earlobes with Gender.

	Value	Df	Asymp. Sig. (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi- Square	.143a	1	.705		
Continuit y Correctio nb	.077	1	.781		
Likelihoo d Ratio	.143	1	.706		
Fisher's Exact Test				.765	.39
Linear- by-Linear Associati on	.143	1	.706		
N of Valid Casesb	592				
a. 0 cells (. is 62.10.	0%) have ex	pected count	less than 5. The	e minimum exp	ected count

The total of 592 samples from two locations Gilgit and Danyore. The data indicates the Earlobes in Male and female. We want to find weather there is a relationship between the Earlobes with Gender at the significance level of 0.05.

By using Chi square test we have the calculated value .143 with degree of freedom 1. And the tabulated value of chi-Square at degree of freedom 1 is 3.841. Here the tabulated value of Chi-Square is greater than the calculated value i.e. .143. Therefore



we concluded that there is no relationship between Earlobes

**Figure.2:** Gender wise Attached and Detached Earlobes in Human Population of Gilgit.

The diagram elucidates the Earlobe ratio (weather it is attached or Detached) in Male and female population. The results showed that that both male and female have the higher ratio of detached earlobes. In Males 221 out of 285 have detached earlobes and 243 out of 307 female have detached earlobes.

Location	Attached	Detached	Total
Gilgit	75 (25.68%)	217(74.3%)	292
Danyore	54 (18%)	246 (82%)	300
Total	129	463	592

**Table 4:** Location Wise Distribution of Attached and DetachedEarlobes in the Human Population of Gilgit and Danyore.

According to above data, A total No. of sample from Gilgit was 292, among these 75 was attached and 217 was detached individual whereas the total samples from Danyore was 300, 54 individuals was with attached earlobe while 246 individuals was having Detached earlobe.

Earlobes* Location Crosstabulation					
Count	Location	Total			
		Gilgit	Danyore		
Earlobes	Attached	75	54	129	
	Detached	217	246	463	
Total		292	300	592	

 Table 5: Cross Tab Analysis of Earlobe attachment with Locations.

Chi-Square Tests						
	Value	Df	Asymp. Sig. (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)	
Pearson Chi- Square	5.128a	1	.024			
Continuit y	4.687	1	.030			

Vol.9 No.8:8477

Correctio nb						
Likelihoo d Ratio	5.143	1	.023			
Fisher's Exact Test				.028	.015	
Linear- by-Linear Associati on	5.119	1	.024			
N of Valid Casesb	592					
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 63.63.						
b. Comput 2x2 table	b. Computed only for a 2x2 table					

The table shows 592 samples from two locations Gilgit and Danyore. The data indicates the Earlobes weather they are attached or detached. We want to find weather there is a relationship between the Earlobes with Location at the significance level of 0.05.

By using Chi square test we have the calculated value 5.128 with degree of freedom 1. And the tabulated value of chi-Square at degree of freedom 1 is 3.841. Here the tabulated value of Chi-Square is less than the calculated value i.e. 5.128. Therefore we conclude that there is relationship between Earlobes (Attached or Detached) with Gender.



**Figure .3**:Location wise Attached and Detached Earlobes in Human population of Gilgit.

The bar diagram elucidates the Earlobe ratio (weather it is attached or Detached) in Male and female in the population of Gilgit and Danyore. The graph shows that both male and female have the higher ratio of detached earlobes.

## DISCUSSION

The study was carried out to find the genetic diversity in the human population of district Gilgit of Gilgit-Baltistan Pakistan. Throughout this study a very important phenotypic traits of humans was studied and found a variation of attached and detached earlobes in population of selected study area. This study was comprised of two phenotypic human traits of human Earlobes which are attached and detached earlobes. The study was in three different areas of District Gilgit i.e. Gilgit city, Danyore city and selected students of KIU (Karakorum International University Gilgit).

Environment effect the both genotype and phenotype of humans, the change in genotype `is the change within genes and may expressed phenotypically but change in phenotype is the change within genes but must appear and expressed phenotypically which is seen by naked eyes, like attached earlobes and separates earlobes, eye colors and hair colors in the population. The genetic makeup of the human does not remain stable for a long time because environment time by time create pressure on the genetic makeup of humans and there are many other environment related factors which can change the whole genetic makeup of the human population like geographical and culture.

This studied showed the investigation of both attached and detached earlobes in the human population of district Gilgit. Total of 592 samples were studied and found the 129(21%) attached and 463(79%) detached individuals. Among the females, attached and detached individuals were 65 and 242 whereas among males, 64 and 221 attached and detached earlobes were recorded.

Earlobes are also known as lobules auricular which the soft fleshy lower part is found at the base of the external ear. Earlobes are composed of the tough areola and adipose connective tissues and have average 2cm long and elongates slightly with age. It is either directly attached to the lateral side of head or detached hanging freely away from the lateral side of head. (www.earlobe.org). The detached earlobe type is slightly bigger than the attached earlobe. This variation in attachment of earlobe is a trait that is inherited from parents and its inheritance follows a pattern.

Inheritance is the process of transmitting biological traits from parents to offspring through genes, the basic unit of heredity. The genetic constitution of organism is manifested phenotypically as observable trait like the earlobe attachment thereby classifying it as a morphogenetic trait. (Ordus at el., 2014)

The earlobe attachment is in fact one of the most important character of the human face. It is fine variations convey how traits are genetically transmitted from parents to off springs. It is most fine fact that the attached earlobes are the recessive phenotypic trait while detached/free earlobes are dominant phenotypic trait.

### REFERENCES

- Miller SF, Weinberg SM, Nidey NL, Defay DK, Marazita ML, Wehby GL, Moreno ULM (2014) Exploratory genotype-phenotype correlations of facial form and asymmetry in unaffected relatives of children with non-syndrome cleft lip and/or palate. Journal of anatomy 224(6): 688-709.
- Ordu KS, Didia BC, Egbunefu N (2014) Inheritance Pattern of Earlobe Attachment amongst Nigerians. Greener J Hum Physio Anatomy 2(1): 001-007.
- 3. https://unburdened.me/Www.Earlobe.org.
- 4. Government of Pakistan and IUCN, 2003.