REVIEW OF RESEARCH
IMPACT FACTOR : 5.7631(UIF) UGC APPROVED JOURNAL NO. 48514 ISSN: 2249-894X
VOLUME - 8 | ISSUE - 3 | DECEMBER - 2018

SURVEY SOME HEREDITARY DISEASES FROM THE POPULATION OF SELECTIVE COASTAL VILLAGES OF TIRUCHENDUR

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ABSTRACT

The objective of this survey is to createawareness among the people about genetically inherited abnormal charecters. Some specialised characters such as hypertrichosis, polydactyly, syndactyly, hare lips and cleft palate were analysed from the individuals of coastal villages around Tiruchendur, Thoothukudi District. During survey, the research team discussed with common people about their genetical character and hereditary diseases. People were advised to avoid marriage between close relatives and before marriage each one must get medical report from authorities.

KEYWORDS: *Hypertrichosis, Polydactyly, Syndactyly, Cleft lip/ Palate, Cataract.*

INTRODUCTION:

Human Genetics is the science of heredity. Human genetics deals with the inherited characteristic - physical and mental, normal as well as abnormal in an individual, a family, a race or a population. It is concerned with the ways in which the characteristics are transmitted from generation to generation.

Chromosomes contain DNA, the genetic material which is transmitted not only from parent cells to off spring cells during mitosis, but also from one generation to another following meiosis and fusion of male and female gametes. The conceptual unit of heredity is called gene.

Genes exist in pairs on homologous chromosomes, except on the X and Y chromosomes. Even on the X and Y chromosomes, there is a possibility of a few loci carrying homologous or allelomorphic genes. An inherited trait, e.g a physical feature, a blood group, or enzyme system may depend on a single gene pair or on the cumulative effect of a large number of genes. The former is called Mendelian or unit factor inheritance and the latter polygenic inheritance. Mendelian inheritance may either autosomal or sex linked. In autosomal traits, the genes are located on any of the 22 pairs of autosomes and in sex linked traits; the genes belong to the X or Y chromosome. The abnormal characterssuch as cleft palate, polydactyly and syndactyly are also heritable.

MATERIALS AND METHODS:

The questionnaire is prepared and it contains some specialised characters such as Hypertrichosis, polydactyly, syndactyly, hare lips and cleft palate. The survey is made from 14 villages in and around Tiruchendur.

Survey of Specialized Characters and Diseases in Human

S.No	Features/ Traits	Dominant trait	Recessive trait
1	Hypertrichosis (y – linked)	Present	Absent
2	Polydactyly	Present	Absent
3	Syndactyly	Present	Absent
4	Cataract	Present	Absent
5	Hare lips/ Cleft palate	Present	Absent
6	Blood pressure	Present	Absent
7	Nose bleed & Blood cyst	Present	Absent
8	Colour blindness	Present	Absent
9	Diabetes	Present	Absent
10	Cancer	Present	Absent

Results and Discussion: The present studies investigated that the inheritance of some hereditary diseases among the human population residing in the coastal areas of TiruchendurTaluk, Thuthookudi District, Tamil Nadu and the data were analysed statistically.

1. Hypertrichosis(y-linked):

It is a y-linked inheritance mostly observed in the pinna of the male. The hypertrichosis is a dominant trait present among the participants with varied numbers. The data of hypertrichosis is as follows: Vannimanagaram(male:22% and female:0%), Amalinagar (male:16% and female:0%),Sundankottai (male:13% and female:0%), Mathimanvillai(male:10% and female:0%),Thoppur (male:8% and female:0%), Pitchivillai(male:7% and female:0%),Kandasamypuram-1(male:7% and female:0%), Adaikalapuram (male:6% and female:0%),Tiruchendur (male:5 % and female:0%) , Arumuganeri (male:0% and female:0%), Kandasamypuram (male:0% and female:0%), Kayalpatiinam(male:4% and female:0%), , Manapadu (male:3% and female:0%) and Kayamozhi (male:0% and female:0%).

2.Polydactyly:

The polydactyly is a genetical defect which is present on both sexes. The data were presented in tables 1-15. The percentage of polydactyly condition is as follows: Adaikalapuram (male: 0% and female:0%), Amalinagar (male:0% and female:0%), Arumuganeri (male0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1 (male:0% and female:2%), Kayalpatiinam (male:0% and female:0%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:0% and female:0%), Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram (male:6% and female:0%).

3.Syndactyly :

Syndactyly is another kind of genetical deformities recorded among the participants. The data were analysed and presented in tables 1-15. This trait is observed only 5 % in females in the villages of Sundankottai. The distribution of syndactyly condition is as follows: Adaikalapuram (male: 0% and female:0%), Amalinagar (male:0% and female:1%), Arumuganeri (male0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1(male:0% and female:0%), Kayalpattinam (male:0% and female:0%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:0% and female:0%), Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:5%), Thoppur (male:0% and female:0%), Tiruchendur (male:2% and female:0%) and Vannimanagaram (male:6% and female:0%).

4.Hare lips/ Cleft palate:

The cleft lip along with palate was recorded in the study areas. The data were presented in the tables 1-15. The cleft lip was observed in both male and female sexes. In some villages the male sex was low percentage of cleft lip but some villages higher incidence was noticed in female and vice-versa. The percentage of cleft lip is as follows:Adaikalapuram(male: 3% and female:0%), Amalinagar (male:2% and female:0%), Arumuganeri (male 0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1 (male:0% and female:0%), Kayalpatiinam(male:0% and female:0%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:10% and female:3%), Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram(male:0% and female:0%).

HEREDITARY DISEASES

1.Nose bleed & Blood cyst : Least frequency of nose bleed and blood cyst condition among the participants in various villages studied was observed inAdaikalapuram(male: 11% and female:33%), Amalinagar (male:0% and female:0%), Arumuganeri (male 5% and female:6%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1(male:0% and female:5%),Kayalpattinam(male:9% and female:2%), Kayamozhi(male:0% and female:5%), Manapadu (male:0% and female:0%), Mathimanvillai(male:10% and female:0%),Pitchivillai(male:0% and female:5%), Sundankottai(male:4% and female:13%), Thoppur (male:12% and female:0%), Tiruchendur (male:0 % and female:6%) and Vannimanagaram (male:6% and female:0%).

2. **Cataract**:During the survey the cataract condition did not observed among the individuals lived in the coastal areas. The percentage of cataract is as follows: Adaikalapuram(male: 0% and female:0%), Amalinagar (male:0% and female:0%), Arumuganeri (male0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1(male:0% and female:2%), Kayalpatiinam(male:0% and female:0%), Kayamozhi(male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai(male:0% and female:0%),Pitchivillai(male:0% and female:0%), Sundankottai(male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram(male:6% and female:0%).

3.Colour Blindness: Colour blindness is a hereditary disorder did not found among the coastal villages during the study period. The percentage of colour blindness is as follows: Adaikalapuram (male: 0% and female:0%), Amalinagar (male:0% and female:0%), Arumuganeri (male0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1 (male:0% and female:0%), Kayalpattinam (male:0% and female:0%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:0% and female:0%), Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram (male:0% and female:0%).

4.Diabetes: Least frequency of diabetes mellituswas observed among the coastal villagers. The data was presented in tables 1-15. The percentage of diabetes incidence is as follows:

Adaikalapuram(male: 6% and female:0%), Amalinagar (male:5% and female:3%), Arumuganeri (male 2% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1 (male:0% and female:2%), Kayalpatiinam (male:4% and female:1%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:0% and female:0%), Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram (male:11% and female:0%).

5.Cancer: Cancer is a gene mutation and cell cycle related disease. The cancer is caused by various agents are collectively called mutagens. The data were presented in tables 1-15. During the survey period in the coastal villages did not observed any cancer impact among the villagers. The percentage of cancer disease among the coastal villagers is as follows: Adaikalapuram(male: 0% and female:0%), Amalinagar (male:0% and female:0%), Arumuganeri (male0% and female:0%), Kandasamypuram (male:0% and female:0%), Kandasamypuram-1 (male:0% and female:2%), Kayalpattinam (male:0% and female:0%), Kayamozhi (male:0% and female:0%), Manapadu (male:0% and female:0%), Mathimanvillai (male:0% and female:0%),

Pitchivillai (male:0% and female:0%), Sundankottai (male:0% and female:0%), Thoppur (male:0% and female:0%), Tiruchendur (male:0 % and female:0%) and Vannimanagaram (male:0% and female:0%).method to screen the genetic association for different malformations. Trisomy 18 has been associated with the presence of cleft lip and/or palate (Lucas *et al*., 1963; Van Wijck*et al*,1961). Clefts of lip or palate or both have also beenobserved in individuals with ring chromosome 18 (Gustavson*et al*., 1962) and chromosome 18 involved in a complex rearrangement (Brewer, 1999). This shows that chromosome 18 might be harbouring a gene (or genes) that have a direct role in lip and/or palate formation, or atleast acts as a modifier duringembryogenesis.

CONCLUSION:

The present study suggests that Government should bring the awareness and also educate the public at large regarding hereditary and acquired genetic conditions. We found the public of visited villages possess only a very basic knowledge and understanding about their health conditions. The awareness programme can be started in the schools and colleges. The Government should take some steps to advance the health of public by investigating the impact of genetics on the causes and treatment of diseases. The people must avoid closely related marriages. If it continues, the dominant gene pool may reduce and also younger generation may get the recessive characters. Government should take measure to prevent these genetical diseases.

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