ISSN: 0474-9030

Our Heritage

Vol-68-Issue-15

January-2020

UGC Care Listed Journal

"Diagnosing Thyroid Symptoms & Remedies Using Data Mining"

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Abstract

Now a days, Thyroid is becoming most important disease that affect the people of all ages. The main cause of Thyroid disorder is iodine deficiency identified by The World Health Organization (WHO). Iodine Deficiency causes cretinism , endemic goiter, physical and mental retardation, hypothyroidism, and poor outcomes in pregnancy. One in ten adults in India suffer from hypothyroidism, hyperthyroidism or thyroid cancer as per survey conducted by Indian Thyroid Society (ITS). Making awareness about thyroid diseases is important rather than cure them. Data Mining is playing important role in predicting many diseases. This research verifies parameters like gender and the age group that are most likely to be affected by thyroid disease as well as heredity of Thyroid disease . The current study includes analysis of thyroid disease symptoms and causes among the population. The researchers used classification models , association and clustering models using weka data mining tool.

Keywords: *data mining, classification model, thyroid disease, association model*

I) INTRODUCTION

Thyroid hormones are useful in regulating body energy, body temperature, the body's use of other hormones and vitamins, and the growth and maturation. The Thyroid gland is a small gland, having weight near about 28 gm., situated in front of neck and just below "Adams apple" or Larynx as shown in The function of Thyroid gland is to take Iodine which is available in many foods and convert it into Thyroid harmones: Thyroxine(T4) and Triiodothyronine(T3).The Thyroid gland can produce either too much hormones or too less hormones. If Thyroid gland producing too much hormones, it is called as Hyperthyroidism and if it produces too less hormones , it is called as Hypothyroidism. Symptoms of Hypothyroidism are fatigue, cold intolerance, constipation, dry skin, too much weight gain, muscle weakness, heavier menstrual periods, thinning hair etc. Symptoms of Hyperthyroidism are nervousness, restless, inability to concentrate, weakness, irregular heartbeat, vomiting, sweating etc.

II) EFFECT OF THYROID IN INDIA

A National Workshop was held in Chennai on the Advanced Management of Thyroid Disorders dated on 5th June 2014. The delegate of workshop stated that 42 million people in India have thyroid disorders. Hypothyroidism is the most common of thyroid disorders in India, affecting one in ten adults.

The prevalence of hypothyroidism in India is 11%, compared with only 2% in the UK and 4·6% in the USA. Compared with coastal cities (e.g., Mumbai, Goa, and Chennai), cities situated inland (e.g., Kolkata, Delhi, Ahmadabad, Bangalore, and Hyderabad) have a higher prevalence (11·7% vs. 9·5%) of Thyroid disease. According to Ambrish Mithal, chairman of the Medanta Division of Endocrinology and Diabetes (Gurgaon, India), the reason of more causing Thyroid disease in India than western countries is

iodine deficiency of country. He also stated that, the highest prevalence of hypothyroidism (13·1%) is found in people aged between 46–54 years, with people aged 18–35 years are being less affected (7·5%).

Swapan Jana, a public health expert and secretary of Society for Social Pharmacology (Kolkata, India) stated that although Thyroid disease is an easy to detect and inexpensive to cure , the patients with hypothyroidism are remain unaware about this and thus disease effects on work performance and economic productivity of Indian People. He further said that "In the past, iodine deficiency was blamed for the causing of hypothyroidism in India, but the disease is still alive in this country, though the promotion of iodized salt since 1983"

In the past two decades, the manufacturing of iodized salt has been increased by almost nine times from 0·7 million metric tons per year in 1985–86 to about 6·2 million nowadays. "Iodine supplementation can also bring auto-immunity, resulting in goiter and thyroid dysfunction", says Mithal.

According to Sanjay Kalra, consultant endocrinologist at the Bharti Hospital (Haryana, India), "India has just completed its transition from iodine deficiency to iodine replete status. Ambika Gopalakrishnan Unnikrishnan, chief endocrinologist at the Chellaram Diabetes Institute (Pune, India), stated that: "Across the world, with the progress of iodization, autoimmune thyroid disease has become the most common cause of hypothyroidism.

Environmental factors other than iodine deficiency are also responsible for hypothyroidism in India. Mithal said, "The unregulated use of pesticides and exposure to endocrine disruptors could be a reason", he also stated that "Unclean drinking water and exposure to industrial pollutants like resorcinol and phthalic acid also cause for Thyroid disease." According to Kalra, "it is important to create awareness in the population and early management of this disease in India."

III) DATA MINING IN HEALTH CARE

Data mining means extracting unknown patterns from huge volume of data which consist of different methods and algorithms. Today's Healthcare industry creates huge amounts of complex data about patients, hospitals, medical devices etc. Data mining is used in various applications such as Healthcare management, Customer Relationship Management, to detect fraud and abuse, Medical device Industry, Pharmaceutical Industry, Hospital Management etc.Different data mining tools are used to analyze and evaluate different healthcare problems like Heart Disease, Cancer, HIV/AIDS, Diabetes Mellitus, Kidney dialysis, Brain Cancer, Tuberculosis, Dengue and Thyroid Diagnosis.

IV) EXPERIMENTS AND RESULTS

Data Set Description

The primary data collected for experimental purpose is from hospitals in Maharashtra. The data has total 200 instances which include males as well as females. This research evaluates parameters like gender, heredity and the age group that are most likely to be affected by thyroid disease. Following attributes are used for analysis of research,Attributes of the classification models used in the experiments

ISSN: 0474-9030

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Sr. No.	Attribute Name	Value Type
1	Age	Continuous
2	Gender	M,F
3	Heredity	Y,N
4	Gain Weight	Y,N
5	Cold Intolerance	Y,N
6	Sweating	Y,N
7	Omitting	Y,N

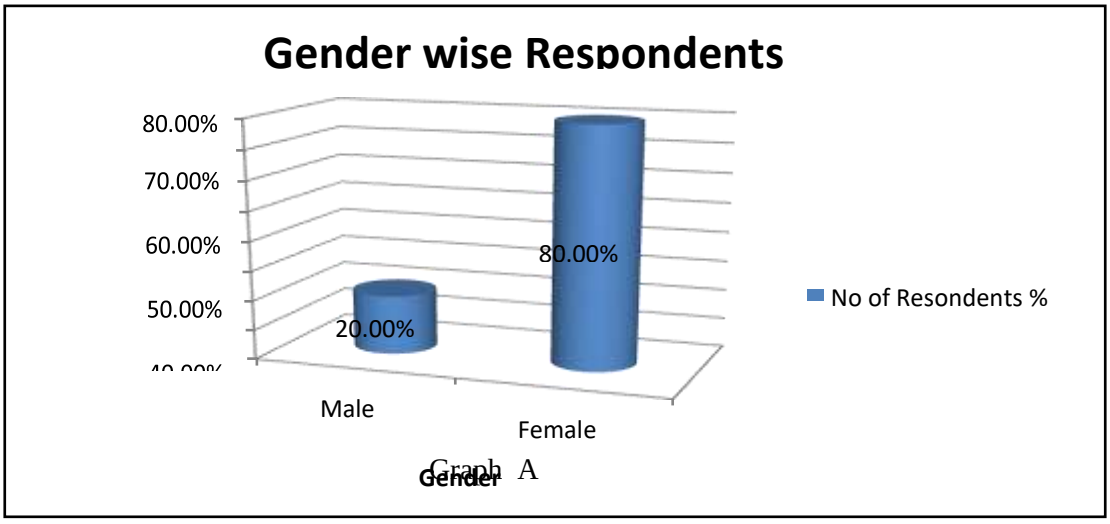
Various Data Mining Algorithms are applied on collected data.

A) Classification

The Zero-R classification algorithm of WEKA is used which illustrates that the thyroid disease is mostly affected in the females than males. It is shown in Fig. A . Graphically , it is also shown in Graph No. A.

Gender wise Respondents

Gender	Male	Female	Total
No of Respondents	40(20%)	160(80%)	200(100%)



Graph A

Gender wise respondents which are affected by thyroid disease are shown in above graph.
Out of 100 % respondents, 20% respondents are male and 80% respondents are female.

Conclusion : This shows that Thyroid disease is more affected in female than male.

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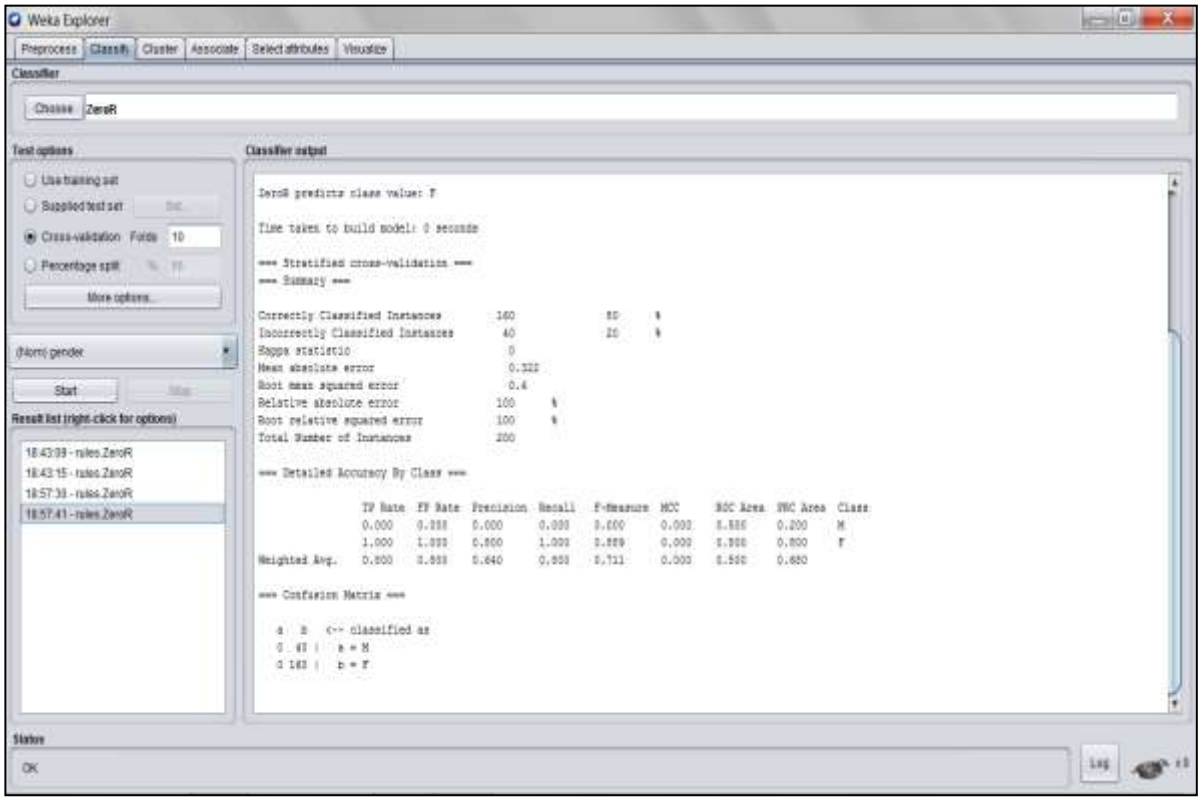

Fig. A

B) Clustering

The Research used K-Means Clustering algorithm which stated that the age group of persons between 21-30 mostly affected by Thyroid disorder. And next age group 41-50 is also mostly affected by Thyroid disorder. It is shown in Fig No. B .

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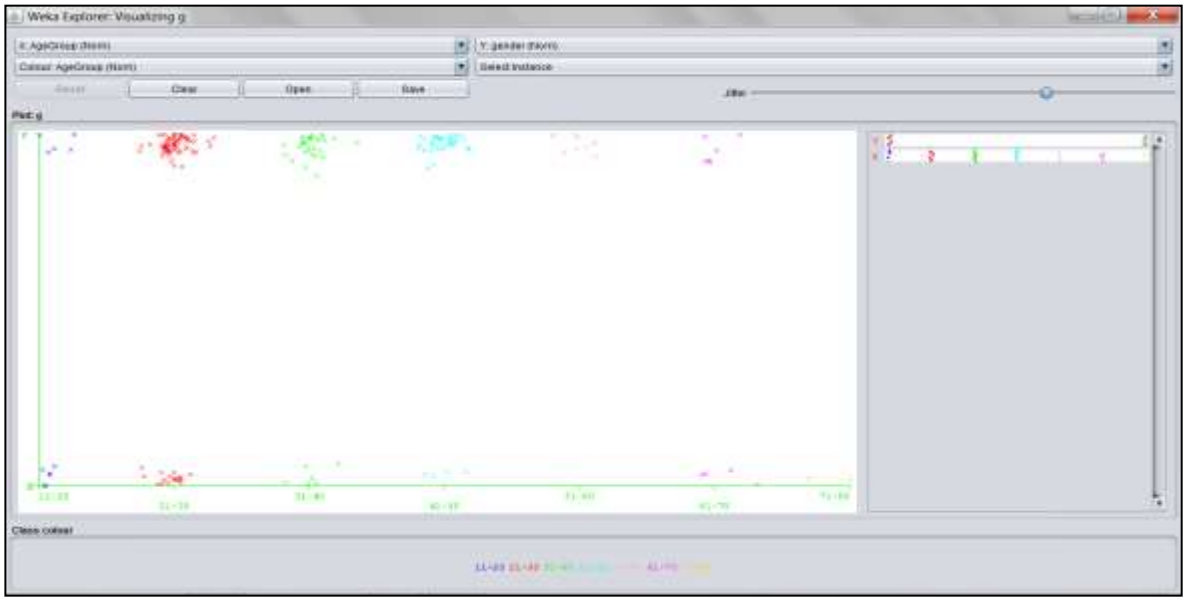


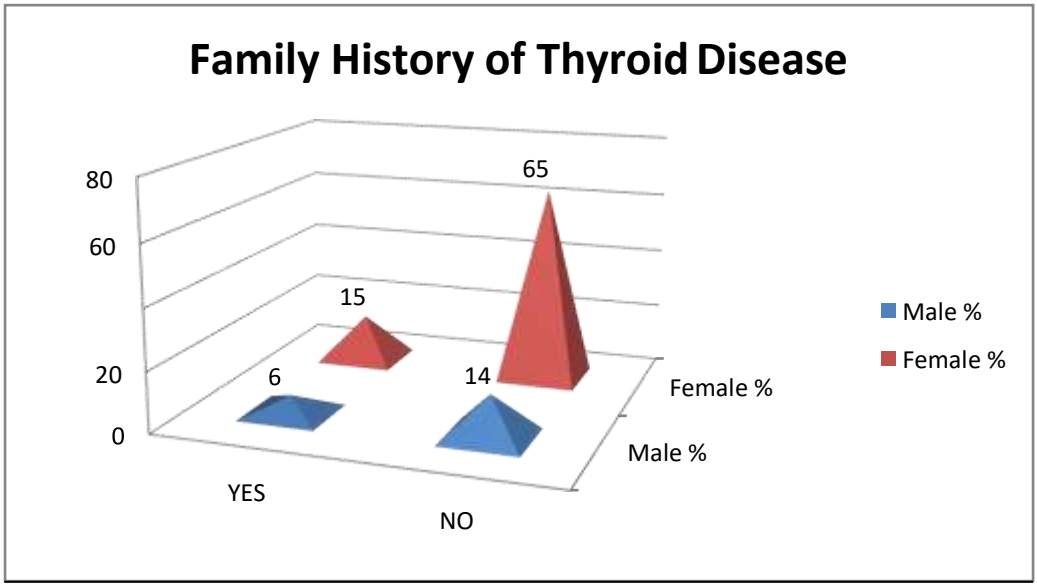
Fig. B

The Simple K-Means algorithm also given result that, Thyroid disease is not hereditary .It is given in Table B. Diagrammatically , it is shown in Graph no. B

Family History of Thyroid Disease

Description	YES	NO	Total
Male	12(6%)	28(14%)	40(20%)
Female	30(15%)	130(65%)	160(80%)
		Total	200(100%)

Graph No. B



Above table and graph shows family history of thyroid disease of respondents .Out of 100 % respondents, 6% and 15% male and female respondents have family history of thyroid disease. Similarly 14% and 65 % male and female have no history of thyroid disease. The possibility of thyroid disease being affected from family is less.
Conclusion : The Thyroid disease is not hereditary in nature.

V) CONCLUSION

This research has used Zero-R Classification algorithm and K-Means Clustering algorithm applied on collected data .This research showed that, the females are mostly affected than males by thyroid disease. Also research illustrated that the age group 21-30 of persons from data collected have more chances of Thyroid disorders. According to the data collected, it is analyzed that thyroid can affect from age of 11-20 years. Further, the results also stated that, Thyroid is not hereditary.

References –

1) Shweta Taneja, Charu Gupta, Tripti Grover, Diksha Tripathi , "Analysis of Factors Which Contribute to Thyroid Disease Using Data Mining Techniques",International Journal of Advanced Research in Computer Science and Software Engineering, Volume 5, Issue 6, June 2015 ISSN: 2277 128X

2) Divya Tomar and Sonali Agarwal " A survey on Data Mining approaches for Healthcare ", Indian Institute of Information Technology, Allahabad, India, International Journal of Bio-Science and Bio-Technology Vol.5, No.5 (2013), pp. 241-266

3) Irina IoniŃă and Liviu IoniŃă " Prediction of Thyroid Disease Using Data Mining Techniques ", Informatics, Computer Science, Mathematics and Physics

4) M. Durairaj, V. Ranjani "Data Mining Applications In Healthcare Sector: A Study " INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 2, ISSUE 10, OCTOBER 2013 ISSN 2277-8616

5) Prem Kumar1, Amit Kumar Dewangan "Classification of Thyroid Disease: A Survey " International Journal of Computer Science and Information Technologies, Vol. 7 (3) , 2016, 1102-1104

6) Dr. G. Rasitha Banu MCA., M.Phil., Ph.D., 2M.Baviya MCA.," PREDICTING THYROID DISEASE USING DATAMINING TECHNIQUE", International Journal of Modern Trends in Engineering and Research, e-ISSN: 2349-9745 p-ISSN: 2393-8161

7) Shweta Taneja, Charu Gupta, Tripti Grover, Diksha Tripathi ," Analysis of Factors Which Contribute to Thyroid Disease Using Data Mining Techniques", International Journal of Advanced Research in Computer Science and Software Engineering Volume 5, Issue 6, June 2015 ISSN: 2277 128X

8) K. Rajam, R. Jemina Priyadarsini ," A Survey on Diagnosis of Thyroid Disease Using Data Mining Techniques", International Journal of Computer Science and Mobile Computing, Vol.5 Issue.5, May- 2016, pg. 354-358IJCSMC, Vol. 5, Issue. 5, May 2016