

Pattern Analysis of H1N1 Swine flu using Data Mining Technique in Health Hazards

V. Kayalvizhy^{1*}, M. IdaRose²

^{1,2}Dept. of Computer Science, KunthavaiNaacchiyarGovt Arts College For women (A), Thanjavur-7, Tamil Nadu, India

*Corresponding Author: Kaylrishi2007@gmail.com

Available online at: www.ijcseonline.org

Abstract: In health care industries many concerns preserve their medical data as electronic data. In India especially for Tamil Nadu people are affected by H1N1 Swine flu is the name for the influenza type a virus that affects pigs (swine). This paper recognizes the various risk elements associated with high level of infection and can include fever, bronchitis, and then using the data mining clustering algorithms to find novelty hidden pattern which helpful to take decision and construction of societal monetary real world health hazard. In Present there is a necessary for accomplished data mining analysis tools to decide and making patters for the health hazards. To recognize the interesting patterns and knowledge based intellectual methods are applied to extract data patterns and scrutinize the worth of a diversity of data mining techniques are used in this health domain.

Keywords: Data Mining, H1N1 Swine flu, Clustering, Pattern Evaluation, Health Hazards.

I. INTRODUCTION

A. Data Mining

Data mining is the procedure from which develop patterns in huge datasets and using numerous procedures and apply machine learning algorithms. Data mining is an inter penal regions of computer science with prime focus is to extract knowledge and finding pattern from the given data. Data mining has been a massive process and methods applied from which discover valuable patterns in data set. It is useful for taking decision from which discovering exact patterns and todays trends is for huge numbers of multifaceted data. Main goals of data mining is to predict exact patterns it involves finding future values. Data mining techniques that will lead to improve the evolution of prediction. There is a quantity of data mining functionalities and comprise classifications, Grouping and deterioration, clustering analysis and outlier analysis.

B. H1N1 as a Health Hazard

H1N1 flu is otherwise called as swine flu. H1N1 was spreading speedily everywhere the world, when persons have a cough or sneeze they spray little droplets of the virus in to the air. The signs and symptoms of swine flu are cough, fever, sore throat, running nose, Body pain, joint pain, headache, fatigue. It creates more serious difficulties including pneumonia, a lung infection and other breathing problems. The goal of this paper by using the clustering algorithms as a tool of data mining techniques to find out the number of people affected by swine flu.

Table 1 The situation in India

States	Major cases found	Death rates
Delhi	Low	Low
Mahara Shtra	High	High
Tamil Nadu	Low	Low
Karnataka	Low	Low
Gujarat	High	Low
Andhra Pradesh	Low	Low
Rajasthan	High	High
Bengaluru	High	Low

II. METHODS

A. LITERATURE SURVEY

To understand the health hazards of Swine flu on human being. We have gathered information from the website. In 1918 people was affecting swine influenza. Swine flu is a one type of respiratory disease which is mostly affected by influenza virus. Swine and avian virus are main cause to create swine influenza. 2009-2010 human population was affected by a virus and it resulted from genetic reassortment and this virus propagate humans worldwide. This virus can be transferred from animals such as pigs to humans and vice versa. Once the individual person was affected, it can communicate from human to human. The clinically proven symptoms such as fever, cough, sneeze, weight loss, it could be appeared from one day to seven days. We found out that seven state are most affected by swine flu these are

Maharashtra, Tamil Nadu, Arunachal Pradesh, Karnataka and Gujarat.

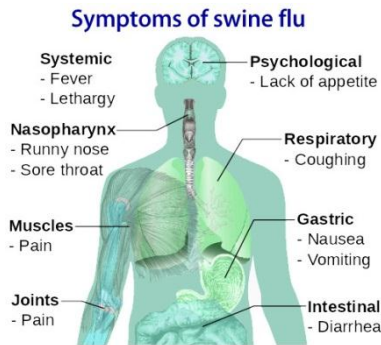


Figure 1 Symptoms of Swine Flu

B. DATA PREPARATION

Based on the information from world wide web . People was suspected to be infected by the swine flu. Every year the people were affected the H1N1 Virus and it was increasing in number of positive cases and finally ocured death mostly in the winter season . During 2017-2018 in winter season , the epidemic became widely spread through India. In India Total Number of people were affected are as follow:

Table 2 Total Data Collected

State	2015		2016		2017		2018*	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Maharashtra	8,583	905	82	26	6,144	778	2,149	259
Rajasthan	6,858	472	197	43	3,619	279	1,968	200
Gujarat	7,180	517	411	55	7,709	431	1,646	51
Karnataka	3,565	94	110	0	3,260	15	674	10
Tamil Nadu	898	29	122	2	3,315	17	529	8
INDIA	42,592	2,990	1,786	265	38,811	2,270	8,025	615

Swine flu affected cases :8025

Death rate :615

Classify the data the degrees of symptoms are as follows

Frequent symptoms:

Fever, cough, running nose, sore throat, Body Aches, Headache, Chillness, fatigue, Vomiting, Diarrhea

Serious symptoms:

Difficult in breathing, Gray Skin colour, Persistent vomiting, irritability, heavy fever with worse cough, rash with fever, Abdomen pain.

Complication:

Asthma, Pneumonia, Bronchitis, Ear Infection, Respiratory Failure.

C.INPUT THE DATA AND SYMPTOMS

Extraction:

We designed each clinical data set as named as A1,A2,..An). We separated target data into three groups as Class A, Class B, and Class C and then applied clustering algorithms like IF Then Else Condition rules. Finally training the data. We added some weights to the trained data.

Table 3 Classify the data

Input the Data	Description
Class A	Frequent symptoms
Class B	Serious symptoms
Class C	Complication

Table 4 Added weight to the Data.

Input Data	If Then Else Rules	Weight
Class A	H1N1 +Ve	.5
Class B	H1N1 +Ve	.7
Class C	H1N1 +Ve	.9

III. ANALYSIS

A. DATA CLASSIFICATION

Data Classification is the mechanism of demonstrating a model that define and discriminates data Classes or concept. Data classification is most useful to categories the various symptoms of the class label for which class label is unknown. Data Classification using if then condition

Those who are found with one of the frequent symptoms are called Class A.

Those who are found with one of the serious symptoms are called Class B.

Those who are found with one of the Complication are called Class C

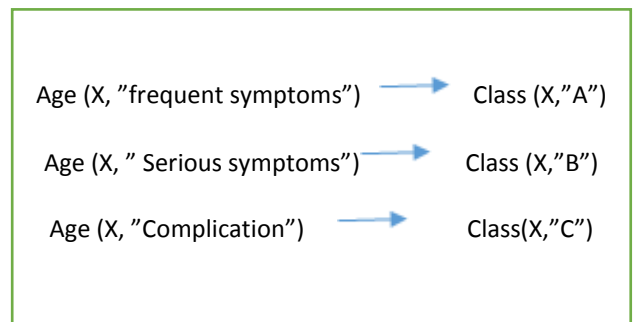


Figure 2 If Then Rules

B. CLUSTERING ANALYSIS

Clustering is distinctive way of the centroid perceptions in the field of unsupervised data investigation, the main objective is to recognize a fundamental depiction of symptoms by grouping them with the similar symptoms and then it can be used to generate the very similar item.

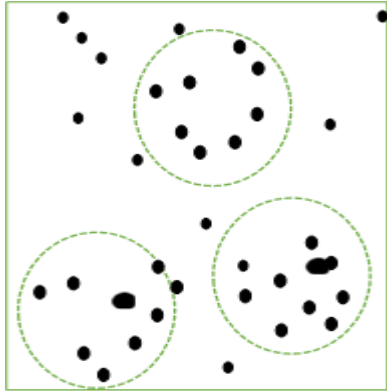


Figure 3 Cluster Analysis

IV. RESULT

A. Correlation Analysis

It is the first stage is to discern the correlated Symptoms and extracting the hidden pattern for the affected person. Correlation rules are intelligent way to measure the correlation between Class A, B and C. The presence of symptoms in Class A is independent of the occurrence of symptoms in other Class B and Class C.

$$\text{Positive (A, B)} = \frac{\text{Positive (A U B)}}{\text{Positive (A) Positive (B)}}$$

$$\text{Complication (B, C)} = \frac{\text{Positive(BUC)}}{\text{Positive (B) Positive(C)}}$$

B. PATTERN EVALUATION MEASURES

The Pattern evaluation Measures attracted interest for such measure all_Positive, Max_Complication

$$\text{all_positive (A, B)} = \frac{\text{Positive (AUB)}}{\max (\text{Positive A , Positive B})}$$

$$\text{max_Complication (B, C)} = \max (P (B/C), P (C/B))$$

We extracted temporal Information and modeled as interval constraints and assigned weight of the feature set. For input data we extracted distinctive feature set applied for scoring methods and compared them the seriousness of the disease. We compared features of frequent symptoms and serious symptoms. The symptoms had been developed rapidly it leads to complication stage and at the end the patients were demise. All the selected symptoms were developed within a week.

Table 5 Feature set and weight

Symptoms	H1N1 +Ve	H1N1 - Ve	Score
Fever	Y		5
Cough	Y		5

Running	Y		5
Sore throat	Y		5
Boad Aches	Y		5
Headache	Y		5
Chillness	Y		5
Fatigue	Y		5
Vomiting		Y	5
Diarrhea	Y		5
Difficult in breathing	Y		7
Geay Skin colour	Y		7
Persistent vomiting	Y		7
Irritability	Y		7
heavy fever with worse cough	Y		7
rash with fever	Y		7
Abdomen pain	Y		7
Asthma		Y	7
Pneumonia		Y	4
Bronchities	Y		9
Ear Infection		Y	4
Respiratory Failure	Y		9

V. CONCLUSION AND DISCUSSION

In this paper, we tried to formulate a procedural approach to extract the distinctive feature of a novel epidemic on the early symptoms experienced by the patients. We applied widely held data mining techniques to Swine flu suspected cases. We could get valuable information with some quantity of data. This procedural approach could be most valuable approaches to endemic communicable disease of the society at the beginning stage. Once the symptoms were identify easy to cure the patient.

REFERENCE

- [1].<https://timesofindia.indiatimes.com/topic/Swine-Flu> ssFever, cough, running nose, sore throat.
- [2]. Jain, M. Murty, and. Flynn, "Data clustering: A review," A M ComputingSurveys,vol.31,no.3,pp.264–323,1999.
- [3].Jiawei Han and MichelineKamber – Data mining concepts and Techniques. -Second Edition –Morgan KaufmannPublishers.
- [4]. Berry MjLinoff G Data mining Techniques: for Marketing, Sales and Customer supportUSA.Wiley, 1997.
- [5].Data mining Learning models and Algorithms for medical applications– Whitepaper - PlamenaAndreeva, Maya Dimibova, PetraRadeve.
- [6].KristineA.Himmerick.H1N1inperspective:Theclinicalimpactofanovelinfluenzaavirus.JAAPACMEarticles.December01,2009

Authors Profile

Mrs. V.Kayalvizhy is an Assistant Professor of Department of Computer Science in Kunthavai Naacchiyar Government Arts College Bharathidasan University), Thanjavur. She is has more than 11 years of academic and teaching experience. She has held various positions such as member of Board of Studies, etc. She has appointed as paper setter and an external examiner for the viva-voce exams of B.Sc., M.Sc., B.C.A., students of various universities. She actively participated in various workshops and seminars (5). She has qualified UGC-NET, MCA.,M.Phil., M.Sc.

Mrs. M.Ida Rose is an Assistant Professor of Department of Computer Science in Kunthavai Naacchiyar Government Arts College Bharathidasan University), Thanjavur. She is has more than 14 years of academic and teaching experience. She has held various positions such as member of Board of Studies, etc. She has appointed as paper setter and an external examiner for the viva-voce exams of B.Sc., M.Sc., B.C.A., M.C.A., students of various universities. She actively participated in various conferences (), workshops and seminars (5). She has qualified UGC-NET, M.Sc.
