HuDA_COVID Human Disposition Analysis During COVID-19 Using Machine Learning

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ABSTRACT

Coronavirus has greatly impacted various aspects of human life, including human psychology and human disposition. In this paper, the authors analyzed the impact of the COVID-19 pandemic on human health. In the proposed work, human disposition analysis during COVID-19 using machine learning (HuDA_COVID), where factors such as age, employment, addiction, stress level are studied. A mass survey is conducted on individuals of various age groups, regions, and professions, and the methodology achieved varied accuracy ranges from 87.5% to 98%. The study shows people are worried about lockdown, work, and relationships. Furthermore, 23% of the respondents have not had any effect. Forty-five percent and 32% have had positive and negative effects, respectively. HuDA_COVID is a novel study in human disposition analysis in COVID-19 where a weighted assignment indicating the health status is also proposed. HuDA_COVID clearly indicates a need for a methodical approach towards the human psychological needs to help the social organizations formulating holistic interventions for affected individuals.

KEYWORDS

ANN, Coronavirus, Data Classification, Decision Tree, Human Psychology, Machine Learning, Random Forest, SVM

1. INTRODUCTION

In today's techno-savvy world, machines and computers have replaced humans for most of the routine tasks. However, in the current situation of a global pandemic, COVID-19 pushed the world within the confines of their homes. It has struck the entire human race really hard, thus impacting health and has twisted the world's economy. To avoid the promulgation of this disease, many countries worldwide announced a complete lockdown, which is an important step but an adamant one for the global economy. For the past many decades, civilization has not faced such a locus situation when most people have not been acquainted with before. People cannot move out of their homes due to the disease's contagious nature. As a result, this virus disturbed the day to day lifestyle completely and caused a huge imbalance in everyone's life financially and psychologically. This virus affected individuals' routine lives and hampered human development in a broader sense concerning trade, economy, and research. One important question that is still not touched much, how COVID-19 is

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affecting people of different regions' mental status? (Roma P. *et.al*, 2020, Muhammad, L. J. *et.al,* 2020) The abrupt lockdown did dire repercussions on the overall health of the people. Predictably, quarantined people are very likely to develop a wide range of psychological stress symptoms, including insomnia, anxiety, and emotional exhaustion (Barkur & Vibha, 2020) (Kochhar *et al.*, 2020). The merciful paradox of crises like this is to bring so many new changes and duties. In China, expected mental health effects are already being reported in the first research papers about the lockdown (Ahmed *et al.,* 2020, Zhang & Ma, 2020).COVID-19 caused universal psychosocial impact by causing mass hysteria, economic burden, and financial losses along with its high infectivity and fatality rates (Dubey *et al.*, 2020, (Chakraborty, C. *et. al*, 2015). Corona phobia (a mass fear of COVID-19) generated a plethora of psychiatric manifestations across society's different strata. No remarkable research has been carried out to study human psychology considering different aspects of the human race in diverse regions during the pandemic.

Motivation: The main motivation behind HuDA_COVID is to observe the impact of lockdown on human mental health (human disposition) by predicting a person's mental state using machine learning models (Uhrig, 1995, Flesia *et. al*, 2020). The need for such a model arises as there are increasing number of cases suffering from depression, frustration and other anxiety related disorders. This study will help all those people in understanding the effect of such pandemic and will urge them to handle the cases with great efficiency and accuracy. The proposed methodology proves very helpful in predicting an individual's health status; therefore, further research can be done by contacting the respondents via email and letting them know whether their health status is negative or positive. This will help in self-building and find ease in the middle of such a traumatic situation. This initiative can reduce the huge cost implications for society.

Contribution: The main purpose of this research is to find out the impact of lockdown on Indians. This study can help many researchers and readers who want to carry out their research in understanding the human disposition analysis during COVID-19 (Garg, L., *et. al,* 2020) using machine learning models (Chakraborty, C. *et. al*, 2017) of ANN (Bircanoglu & Arica, 2018, Agostinelli et. al, 2014), SVM (Demidova et. al, 2015), DT (Tu & Chung, 1992), RF (Liaw & Wiener, 2002). The main contribution of HuDA_COVID model is:

- We prepared a questionnaire (reference material) consisting of specially curated 33 questions to collect the responses from users of seven Indian states: Delhi, Jammu & Kashmir, Haryana, Uttar Pradesh, Tamil Nadu, Maharashtra, and Punjab.
- We designed the questions in the questionnaire in two languages: Hindi and English, to make the homogeneous reach among people of different age groups, professions (from a farmer to an engineer).
- We identified 12 most relevant parameters (*Addition to smoking, drinking and social media, whether a respondent feels the undue pressure of being productive or not, Stressed before lockdown, Adapting to the situation of lockdown, Concerned about the impact of lockdown on various aspects, Feeling isolated during lockdown etc.*) and filtered them out of a total 30 parameters to understand the human disposition.
- We introduced a collective weighting function W_i_C19 for health status assignment to each collected data.
- We proposed an algorithm for the HuDA_COVID model which follows an empirical, systematic and controlled study of observations collected from mass surveys.
- We analysed the proposed HuDA_COVID model to predict the mental health prediction of any individual.

Outline: The paper is structured as follows. Section 2 highlights related work. Section 3 discusses the proposed methodology demonstrating the proposed algorithm along with data engineering, ML

training. Section 4 explains results and analysis of proposed work. Section 5 concludes the paper and highlights the future work.

2. RELATED WORK

The World Health Organization declared COVID-19 as a pandemic worldwide. Prevailing this situation, many researchers contributed to the analysis and forecasting of various modularity of COVID-19. Barkur & Vibha, 2020, analysed the human disposition on Indian community after the nation-wide lockdown. HuDA_COVID collected the Twitter data to analyse the human imposition, used the social media platform (Twitter) for the analysis. Overall, it can be seen that Indians have taken the fight against COVID-19 positively and majority are in agreement with the government for announcing the lockdown to flatten the curve. The related work in this field is thus, studied across two major impact dimensions: Lockdown impact and Psychological impact. These are explained in sub-section 2.1 and 2.2 respectively.

2.1 Lockdown Impact

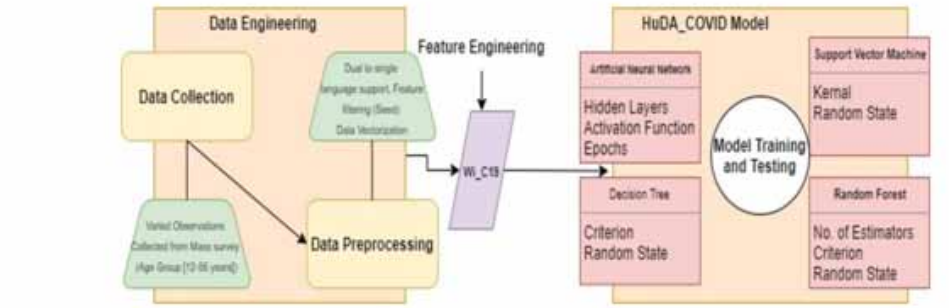
In the work of (Wise *et. al.* 2020), it was observed that by mid-March 2020, the COVID-19 pandemic spread to over 100 countries and all 50 states in the US. Further, in the work of (Kumar & Dwivedi, 2020), Lockdown as preventive strategies are aimed to reduce the community transmission as a best weapon to defeat the COVID-2019. Lockdown situations have changed habits and way of living of given population results of responses about work from home 55% participants are working from home since lockdown condition implementation. Since lockdown 40% of participants agreed to use more internet data on official work and 31% of participants use internet data more than usual to access social media since lockdown.

2.2 Psychological Impact

It is also observed that the 2019 coronavirus disease epidemic is a public health emergency of international concern and poses a challenge to psychological resilience, economy and social life of people (Bhat *et. al.* 2020). The respondents in majority were of the opinion that those who have travel histories (94.5%), who are migrant workers (97.5%), who contact with any corona positive (98%), those living in red zones (80.5%) should be tested on priority basis. It was suggested that to cope with COVID-19 lockdown stress, keep ourselves busy in physical activities, religious activities and social work. The results have implications for our understanding of how risk perception and protective behaviours can facilitate early interventions during large-scale pandemics. In (Li *et. al.* 2020) it is stated that COVID-19 (Coronavirus Disease 2019) has significantly resulted in a large number of psychological consequences. The method in (Li *et. al.* 2020) is designed to explore the impacts of COVID-19 on people's mental health, to assist policy makers to develop actionable policies, and help clinical practitioners provide timely services to affected populations. The results in (Li *et. al.* 2020) contribute to the knowledge gaps of short-term individual changes in psychological conditions after the outbreak. In another study, it is perceived that the pandemic of coronavirus (COVID-19) hit India recently; and the associated uncertainty is increasingly testing psychological resilience of the masses (Varshney *et. al.* 2020). From the work of Varshney *et. al.* 2020, it is observed that during the initial stages of COVID-19 in India, almost one-third respondents had a significant psychological impact. This indicates a need for more systematic and longitudinal assessment of psychological needs of the population, which can help the government in formulating holistic interventions for affected individuals.

However, none of the previous methods in state-of-the-art works have studied human disposition for predicting the mental health of a person in such a pandemic situation. On the contrary, they have manifested only the survey statistics.

Figure 1. Generic block diagram of proposed HuDA_COVID methodology



In this paper, HuDA_COVID predicts the mental health status of a person using a variety of machine learning tools and classifiers such as ANN, DT, RF and SVM classifier. The accuracy of the model is approximately 98% (using SVM). Furthermore, the age group that is mostly affected by this pandemic has been clearly depicted.

3. PROPOSED METHODOLOGY

In this section, the establishment of HuDA_COVID is explained. The process of analysing the human disposition consists of various steps. These steps are consecutively adopted in order to have a better understanding of the person's psychology. This section explains the entire process of data collection. Data collection is done with the help of mass surveys: across various age groups from 12-55 years old from different states following various criteria of employment, addiction, gender, daily routine, lockdown zones, hygiene, nature of the respondent etc. Further, cleaning of extraneous data is explained. It demonstrates the order in which the responses were converted into a single language using machine learning tools (Alpaydin, 2020) and python language. A generic flow diagram of HuDA_COVID is shown in Figure 1.

The subsection discusses the disposition of the selection of 12 major factors to predict human psychology with agents such as addiction to smoking, social media, drinking, stress, and pressure. The proposed methodology consists of four sections: (i) Data engineering (Data collection & data pre-processing) (ii) Feature engineering, (iii) Weighting function, (iv) HuDA_COVID model. We explained theses phases in following subsection:

(i) Data Engineering

- **Data Collection**

The first step is to prepare the set of quotations and upload the questionnaire online for the people survey. For the convenience of the people, we designed the questionnaire in two languages i.e English and Hindi to make the same reach among the people in urban and rural areas. This step contributes distinctively in making the mass survey plain and understandable. We targeted a mixed range of people from different age groups, professions (from a farmer to an Engineer) to genuinely maintain the heterogeneity in the responses.

The salient features of the observations obtained from the mass survey in the proposed work are as follows:

Table 1. Google Form Questions

S. No.	Google Form Questions	
	Questions	**Answers**
Q1.	Full Name	{Text field}
Q2.	Gender	**Options:**
		1. Female
		2. Male
		3. Intersex
Q3.	Email ID	{Text field}
Q4.	Where do you live? (Country / State / District)	{Text field}
Q5.	Classify the place, you live in as the following:	**Options:**
		1. Red zone
		2. Orange zone
		3. Green zone
		4. Containment zone
		5. Buffer zone

a) Empirical – HuDA_COVID is based on observations collected from mass surveys of age groups from 12-55 years.
b) Systematic and controlled – it follows orderly and sequential procedure.
c) Objective, unbiased, & logical – In the proposed methodology, all findings are logically based on empirical.
d) Employs quantitative or statistical methods –The data is transformed into numerical measures and is treated statistically.
e) Insightful analysis of the well-being of people of various age groups.
f) Selective approach to questionnaire considering the psychology of the human mind.
g) From employment to physical fitness, HuDA_COVID has covered the impact of COVID-19 on the professional and personal life of an individual.

We obtained a total of 277 responses from seven different Indian states: Delhi, Jammu & Kashmir, Haryana, Uttar Pradesh, Tamil Nadu, Maharashtra, and Punjab. For the reference of the reader, the survey standout is shown in Table 1 and Table 2. The mass survey questions consist of adequate response options which prevent undermining the importance and quality of HuDA_COVID.

The questions are designed to predict the sources that affected them psychologically so as to identify their scale on the range of negative to positive.

Data Pre-Processing

The second phase is to pre-process the collected data. We accessed the collected data, cleaned it and analysed. The data was recorded in text and numbers in the google form and was also accessible in graphs. We converted all the questions and recorded responses into English to make it uniform in nature (Rahm & Do, 2000) (Kotsiantis *et. al.* 2006). In the next section, the working of HuDA_COVID is explained with a detailed discussion afterwards.

Table 2. Google Form Questions

S. No.	Google Form Questions	
	Questions	**Answers**
Q29.	Rate yourself on the scale of being hygienic and keeping your surrounding clean.	On a scale of 1-5.
Q30.	Rate yourself on the scale of being Introvert to Extrovert	On a scale of 1-5.
Q31.	Before lockdown how much did you prefer to hangout?	On a scale of 1-5.
Q32.	Do you suffer from any of the diseases?	**Options:**
		1. Heart Disease
		2. Diabetes
		3. Blood Pressure
		4. None of the above
Q33.	Rate yourself on the scale of physical fitness	On a scale of 1-10

(ii) Feature Engineering

We performed parameter filtering in this phase for the proposed HuDA_COVID model. Out of 30 factors, 12 major factors responsible for predicting Human Psychology during the lockdown phase have been selected. These factors are mentioned below:

- *Addiction to Smoking*: - If a person is highly addicted to smoking, then weight is given -2 as a value and if a person isn't addicted to smoking or has selected low level addiction then the value is 0.
- *Addiction to Drinking*: - If a person is highly addicted to Drinking, then weight is given -2 as a value and if a person isn't addicted to Drinking or has selected low level addiction then the value is 0.
- *Addiction to Gaming*: - If a person is highly addicted to Gaming, then weight is given -2 as a value and if a person isn't addicted to Gaming or has selected low level addiction then the value is 0.
- *Addiction to Social Media*: - If a person is highly addicted to Social Media, then weight is given -2 as a value and if a person isn't addicted to Social Media or has selected low level addiction then the value is 0.
- *Whether a respondent feels the undue pressure of being productive or not:* - Here if the person feels the undue pressure of not being productive in lockdown phase then the weight is given -1 as a value. And if the person doesn't feel any undue pressure of being productive then the weight is given 0 as a value.
- *Stressed before lockdown*: If a person wasn't stressed before the lockdown then weight is given 0 as a value otherwise -2.
- *Adapting to the situation of lockdown:* If a person is adapting to the situation of lockdown then the weight is given 0 as value. If a person has already adapted to the situation of lockdown then the weight is given 2 as value. If a person is feeling it difficult to adapt but is willing to try then the weight is given -1 as value. If the person doesn't want to adapt and is feeling tensed then the weight is given -2 as value.
- *Concerned about the impact of lockdown on various aspects*: If a person is feeling very concerned then the weight is given -2 as value. If a person is feeling somewhat concerned then the weight is given 0 as value. If a person is not concerned then the weight is given 0 as value.

- *Feeling isolated during lockdown*: During lockdown if a person sometimes is feeling isolated then the weight will be given 0 as value. If the respondent isn't feeling isolated then the weight will be given 0 as value. If the respondent is feeling isolated then the weight will be given -1 as value.
- *Fear of COVID-19*: If the person fears COVID-19, then the weight will be given 0 as value. If the person doesn't fear COVID-19, then the weight will be given -1 as value.
- *Employed or not:* If the person is employed then weight will be given as -1/0 as value. If the person isn't employed then weight will be given as 0 as value. If the person is employed and working from home then weight will be given as 0 as value. If the person is employed and working via offline mode then weight will be given as 0 as value.
- *Daily Routine:* -It is based on the daily routine of a person and it ranges from -2 to 1 depending on the selected option.

(iii) Proposed Weighting Function (W_i_C19)

This section explains the order in which data is transformed into numerical measures and is treated statistically. It also explains the various settings in the training and testing phase of HuDA_COVID.

After obtaining a clean dataset, a fixed weight [IV-C] is given for each answer and sum of weights will result in obtaining the status of a single person. Iterating the values through all the columns and rows will provide the final health status column. This dataset can be used to study various factors that are responsible for the stress of a person. 12 major factors out of 30 were selected to study the stress level. Feature scaling (Standard) (Garcia *et. al.* 2015) has been applied on the independent variables. The values of health status are in between -1 and 1. For understanding the effective working of HuDA_COVID, the use of various structures is explained. To determine the overall health status of a person, **(W_i_C19)** weighting function is proposed which is responsible for generating the overall health status of a person by using a simple technique.

The dataset has been converted into the numeric form by using reward technique. In this technique each option is tagged as negative or positive. The tag ranges from -2 to 2 for each option. The sum of all tags of a column will finally result in the Health status of a person. The computation is given in Equation 1.

Where, W_i_C19 = Health Status
I = Number of Rows
J = Number of Columns
X = Reward or Weight
K = 1 (Standard default error bias set)

In order to understand the complete working methodology of the proposed weighting function in HuDA_COVID, an algorithmic framework is given in Algorithm 1.

After this, Result is appended to form a new Column named 'Health Status'. In Algorithm 1, the working a control flow statement for specifying iteration is described which is used to generate the health status by summing up all the values. The iteration is done for all the values obtained from the survey. Further, all the given values of a particular answer as per its response is aggregated and value of *health status"* is thus updated. If the final value after aggregation is below 0, then it is considered as -1 and negative. If it is above 0 then it is given a value above 1 and if it is equal to 0 then it is given a value 0(neutral). (All the values are kept in between -1 and 1). The *Health Status* was bridle to the three outputs which are Positive, Negative and Neutral.

(iv) Proposed HuDA_COVID model

Algorithm 1. Pseudo code of Proposed W_i_C19

/* proposed Weighting scheme, W_i_C19: HuDA_COVID
Formation of Health Status Column */
Data:- Responses and Factors[III - C]
Result:- Submission of all the Factors
For not the end of tuple do
Sum all the factors:
If the Result is less than 0:
Set Result as -1
Else if Result is Greater than 0:
Set Result as 1
Else
Set Result as 0

In this section, the major components of development of HuDA_COVID are discussed in detail along with the generic flow of the proposed work. The section discusses major heuristics, used as filtering parameters for predicting human psychology during the lockdown phase. These factors along with their corresponding values is also explained. Further in this section, the feature engineering employed with HuDA_COVID is also discussed which plays a vital role in the weight assignment of the reduced features. In this section, the proposed novel weighted assignment for projection of human health status is also explained. We performed mental health prediction using best of model prediction using ANN, Decision Tree, Support Vector Machine and Random Forest.

The dataset has been trained on different machine learning algorithms. Table 3 represents the configurations used to achieve the highest accuracy. The rectifier has been used as an Activation Function in Artificial Neural Network. Due to less data availability the accuracy of the ANN is the lowest as compared to other algorithms. The next algorithm, which is Random Forest, gave accuracy slightly more than ANN and it is just because of the correctly chosen number of estimators. The next two algorithms, Decision Tree and SVM gave the best accuracies, i.e. 92.8% and 98% respectively. However, due to over fitting of SVM, **Decision Tree Classification** is considered as the best algorithm of the four machine learning algorithms for predicting the mental health status of a person. The

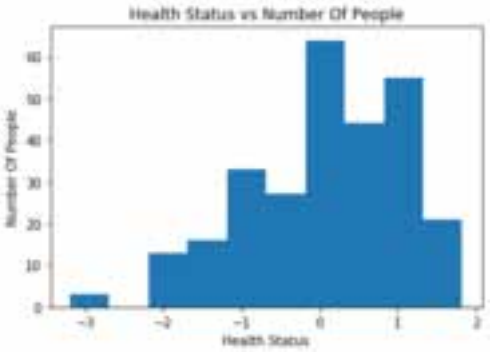
Table 3. Configuration table of ANN, SVM, Random Forest and Decision Tree

Method	Parameter	Value
Artificial Neural Network (ANN)	Number of hidden layers Weights or interconnections Activation function No. of epochs	2 14 ReLU 50
Random Forest (RF)	Number of estimators Criterion Random state	10 Entropy 0
Decision Tree (DT)	Criterion Random state	Entropy 0
Support Vector Machine (SVM)	Random state Kernel	0 Linear

Table 4. Comparison of ANN and other Machine Learning models with Accuracy(%)

Method	Accuracy (%)
Artificial Neural Network (ANN)	85.9
Random Forest (RF)	87.5
Decision Tree (DT)	92.8
Support Vector Machine (SVM)	98

Figure 2. Histogram of Health Status v/s Number of People



accuracies of SVM, Decision Tree Classification and Random Forest have been calculated with the help of accuracy_score which is the part of sklearn.metrics package. However, for ANN optimizer as ADAM and loss as binary_crossentropy have been used.

4. EXPERIMENTAL RESULTS AND ANALYSIS

This section discusses the experimental setup and analyses the results with the help of histogram and graphs. It makes the overall health status for easier understanding. The settings in the training and testing phase are also explained in subsection 4.1. The overall analysis is presented in subsection 4.2

4.1 Machine Learning Models (Training and Testing phase)

This subsection explains the various parametric settings in training and testing phase. An accuracy comparison of various machine learning models and ANN is also explained. Table 4 represents the final obtained accuracies of the machine learning methods used to predict the mental health status of a person. Due to high variance in dataset available for deep learning method i.e. ANN has the lowest accuracies among the four methods used.

Figure 3 and 4 represents the overall health status. To begin with, 23% of the respondents have had no effect on their mental health, 45% have positive effects and the rest 32% have had negative effects. Figure 4 show another statistic that can be concluded from the survey is that the people of age group (21-25) have more negative effects as compared to others.

Figure 4 is a scatter plot graph of the people of various age groups with respect to their mental health status. It is clearly visible that age group of 16-20 has maximum negative impact due to COVID.

Figure 5 is a representation of the usage of social media by the age group of 16-20 years old. It is clear that Medium Level addiction is dominating followed by the low level addiction.

Figure 3. Normal Fit for Health Status vs. Number of people

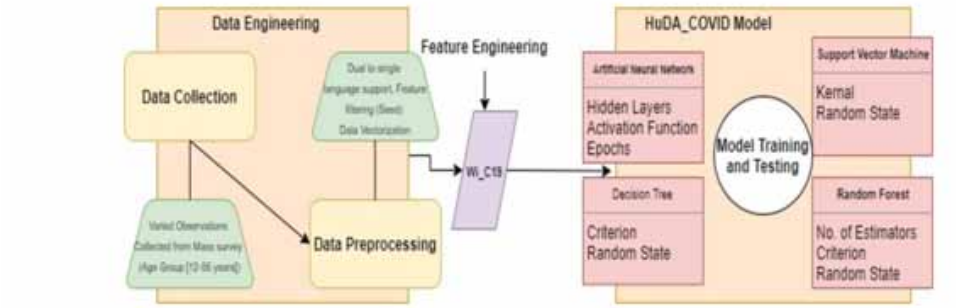


Figure 4. Graph showing Statistics of age group wise mental health status

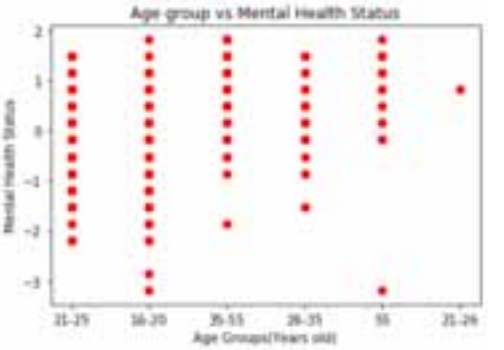


Figure 5. Representation of Social Media usage by the age group of 16-20 years old

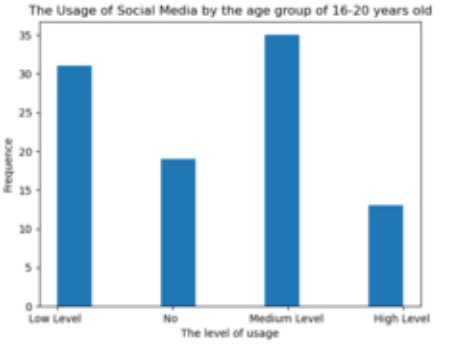


Table 5 shows the stress level of two different age groups for their studies and the table 6 is a representation of respondents of various age groups having negative mental health and their internet usage per day. Most of them use the Internet more than 8 hours per which is an excessive amount of usage.

Table 5. Representation of Stress level due to their Studies for various age groups

S.No.	AGE GROUP	CONCERN FOR STUDIES		
		Very Concerned (Freq in terms of people)	Somewhat Concerned (Freq in terms of people)	Not Concerned (Freq in terms of people)
1.	16-20 Years old	58	35	5
2.	21-25 Years old	62	25	2

After the analysis it is found that the category which has maximum impact due to COVID-19 pandemic in India is the young generation (16-30 years old) as compared to the others that is children (12-16 years old) and elders (above 40 years old).The undue pressure of their studies and employment might be the reason of the same. The machine learning model is able to predict whether a person's health is positive, negative or neutral.

4.2 Analysis

The findings of this study clearly show that the people who are responsible at their house for carrying out the obligations of their family, irrespective of the age group are more affected by the lockdown phase than others. They comprise mostly of the younger generation and since they are curious to the changes happening in their surroundings which are why they are more affected than the older generation who has attained a certain level of maturity and stability in their life. A detailed analysis is presented in the following points:

- People are experiencing the changes that took place due to the lockdown such as arranging the safety essentials sanitization mediums at work place and homes, storing the necessary utilities for the lockdown phase.
- They experience emotional pressure and likewise they are also taking care of their family as much as they can.
- They need to sanitize the household essentials of every category such as fruits, vegetables, stationary, newspapers, daily use products such as milk, bread etc. on a daily basis.
- Reopening of religious places in unlock 1.0, brings difficulties for elder generation as well to remain careful to the sudden changes. These changes have occurred due to the pandemic & most of them suffer from physical disabilities. These disabilities do not let them roam around without support (doors, handles and other household griping's)
- It can be said that some of the daily life challenges, as mentioned above affect people emotionally and mentally and can be considered as the cause of the negative impact of lockdown.

Table 6. Representation of Internet usage of respondents having Negative Mental Health

S.No.	AGE GROUP	REPRESENTATION OF INTERNET USAGE OF RESPONDENTS HAVING NEGATIVE MENTAL HEALTH			
		0-1 (Hours per day)	2-3 (Hours per day)	4-5 (Hours per day)	More than 8 (Hours per day)
1.	16-20 Years old	3	16	24	17
2.	21-25 Years old	2	15	22	22

- In India, if the case of working women is considered, most of them need to balance between household work and the office work. The household help may not be available and hence there is a sudden increase in the household work which in turn creates a pressure on their minds to do equally good in all the fields.
- Families that have been cooperating amongst themselves have tended to be more positive than others as each and every family member is supported by another which provides a sense of satisfaction and peace around an individual necessary for emotional stability. Therefore, it can be said that this pandemic and the lockdown has deeply affected the nation by making everyone emotionally more vulnerable than regular life.

5. CONCLUSION AND FUTURE WORK

In HuDA_COVID, a benchmark study is established by taking the opinion of masses to understand the human disposition. After the analysis of human Disposition using Machine learning it is observed that this step of lockdown declared by the Government has mostly affected the youth of this nation. Different Machine Learning algorithms were used for the study of human mental health during the lockdown and COVID. As the mental health was predicted all of them resulted in different accuracies, the deep learning model that is ANN gave an accuracy of 85.9%, Random forest of 87.5%, Decision Tree Classifier of 92.8% and Support Vector Machine of 98%.

In the proposed work, it is also observed that the younger generation is feeling an undue pressure, be it in the aspect of studies or employment. They are experiencing the changes of both, the internal environment (at home) and the external environment (outside the home) and therefore are affected more. The elder age group (above 40 years) is less affected as they are spending their much of the time with family. Accordingly, the younger age groups (less than 16 years) are feeling less affected due to the dreadful virus and the lockdown. Currently the relationships are improving and they are kept at home under able stewardship. Further, 23% of the respondents have had no effect on their mental health, 45% have positive effects and the rest 32% have had negative effects on their mental health.

There are many aspects in life which can affect humans negatively. Be it hurdles at work, quarrels with close ones, etc. Due to the nationwide lockdown, people are affected a lot by sudden changes that occurred in their life. Many of them lost employment and some of them started working from home. This led to the problems such as anxiety, frustration, etc. Whether it's an employed or an unemployed person with the household work, when they weren't able to deliver the output of their work efficiently it led to stress.

Now it can be suggested that to maintain good mental health, the most affected group i.e. the youth should add relaxing activities into their day to day routine such as yoga, meditation, etc. They should resume their hobbies in order to get relieved from that undue pressure thus giving themselves much needed personal time which will in return help them to maintain self-satisfaction regarding their personalities. It can be noted that self-love and relaxing is necessary at this stage as it is a situation which is hard and equally threatening to the mental health of the entire mankind. Getting panicked due to outburst may not help to solve the problem. People need to be emotionally strong and need to follow the instruction laid down by the Government.

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