CORONA VIRUS AND OUR ENVIRONMENT

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ABSTRACT: The coronavirus disease (COVID-19) has emerged as a global pandemic, significantly impacting human lives. Given its scale and severity, understanding public opinion regarding the spread and origin of the virus is crucial. As COVID-19 is a zoonotic disease, we conducted an online survey in June 2021 to assess public perceptions of any potential connection between the environment and the transmission of the virus. A total of 1260 individuals participated in the survey.
Key findings from the survey include:
1. Awareness of Causative Organism: Most participants demonstrated awareness of the causative organism responsible for COVID-19.
2. Linkage Between Environment and Spread: A majority of respondents believed that there was a direct linkage between environmental degradation and the spread of the virus. Factors such as deforestation, wildlife trade, hunting, and land use change were perceived to play a role in the transmission of zoonotic diseases.
3. Climate Change Impact: Respondents expressed concern that climate change could exacerbate the spread of such diseases in the future.
Preventive Measures: The majority agreed that a combination of vaccination efforts and environmental preservation and protection could effectively prevent the spread of COVID-19.
4. Youth Perspective: While the study presented mixed responses from the Indian public, a higher percentage of young individuals believed in a strong association between the environment and the spread of the coronavirus.
5. These findings highlight the importance of public awareness, environmental stewardship, and collective efforts in mitigating the impact of zoonotic diseases like COVID-19.
KEYWORDS: covid-19; zoonotic diseases; public perception; pandemic; Anthropogenic disturbance

INTRODUCTION

Corona virus disease (COVID-19) is a global pandemic, affecting human life severely. It has infected 226.84 million people world-wide which resulted into death of 4.66 million [1]. In April and May 2021 sudden surge in cases of corona virus infection was reported from different parts of India [2]. Government of India data showed that 50% of the COVID-19 death was reported in the month of April and May alone [3]. Many scummed to death while those who somehow survived from COVID 19 tsunami has suffered from post-covid symptoms.

International Committee on Taxonomy of Viruses (ICTV) has named the virus causing pneumonia like disease the "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) see [4]. Genomic comparison suggested that SARS-CoV-2 probably evolved from a strain found in bats as it had maximum (96.3%) genetic identity with a horseshoe Bat CoV sequence and lesser (82%) identity with that of human SARS CoV-1. The Malayan pangolin CoV is thought to be the potential intermediate amplifying the host that could have triggered virulence towards humans [5]. The higher sequence similarity in the spike protein receptor binding domain further validated it. Therefore, as per WHO, COVID-19 is considered as a zoonotic disease.

There is re-emergence of many other zoonotic diseases recently such as Monkeypox, Nipah, Zika Virus Disease, Dengue, Lassa fever, Bird Flu (H5N1), Swine Flu (H1N1), SARS CoV-1, MERS [6-9]. Sudden increase in outbreak of zoonotic disease possibly has some link with environmental degradation because of anthropogenic activities [10-11].

In this survey, we have assessed the public opinion especially of youth, regarding the outbreak of COVID-19 and its linkage if any with changing environment.

MATERIALS AND METHODS

An online questionnaire was prepared using 'google form'. It was shared among the undergraduate students during online classes held during June-July 2021. They were asked to circulate and got it filled among their social circles through online medium (email, whatsapp and Facebook etc.). Survey was carried out June-July 2021. Respondents were asked to furnish their name, age, occupation and location. A total of 6 questions were asked from each respondent. In this online survey, Likert scale was used [12], as it is considered most useful in behavioral research [13].

RESULTS

A total of 1260 individuals participated in this online survey. Participants were from different parts of India. Majority of participants i.e., 91% of them were within the age group of 15-30 years. Thus, our data set largely represented an age group which fall within the category of youth. Hence, in this study, we assessed the perception of Indian youth toward corona virus and its relation with environment.

Of the total participants, 80.2% of the participants were students (school/college), 8% of them were employed in service sector, while remaining of them were either in business or unemployed or retired from services.

The surveyed individuals were asked six questions related with Corona virus and environment. In question number one, participants were asked about the causative organism of COVID-19 infection. Most of the participants i.e., 98.5% of them were aware that COVID-19 was a viral disease (Fig. 1). The higher age group that included 30-45 and >45 year, around 100% of believed it to be a viral disease.

In question number two, participants were asked “do they think COVID-19 infection is a zoonotic or of animal origin”? On this question > 50% of the participants believed it to be a zoonotic disease, 25% were of neutral opinion while 25% of them disagreed (Fig. 2).

Age wise analysis of the data set showed slight variation in the perception, however higher age group such as >45 year 30% of them disagreed that COVID-19 was zoonotic disease (Fig 3).

In another question, the participants were asked, “Do they think COVID-19 is human induced”? On this question most of them agreed (61%) while very less percentage of them disagreed (14%) and almost 25% of them were of neutral opinion (Fig. 4).

Age wise distribution showed, the middle age group (30-45 year) relatively higher percentage of them i.e., 70% of them believed that COVID-19 was human induced. Moreover, relatively higher percentage of disagreement were recorded among 30-45 and > 45 age groups (Fig. 5).

In question number four, participants were asked “Do they think deforestation, land use change, habitat loss, consumption of wild meat are the prominent reasons for spread of COVID-19”? On this question, we got mixed response from the participants. Around 46% of them agreed while 30% of them disagreed with this. Whereas 23% of them were of neutral opinion (Fig. 6).

Age wise distribution showed not much variation in different age groups except with in higher age group (>45 year) relatively lesser percentage of participants (38%) agreed (Fig. 7).

In question number five, participants were asked, “Do they think climate change will aggravate the spread of COVID-19? Less than50% of the total participants agreed that climate change would aggravate spread of COVID-19, whereas less than25% of them disagreed and 28% of them were of neutral opinion (Fig. 8).

Among the different age groups, only >45 age group showed relatively higher percentage of participants i.e., 40% of them did not believe that climate change would aggravate the spread of COVID-19 (Fig. 9).

In the last question participants were asked, “What is the best possible way of prevention of COVID-19 in future?” Majority of them i.e., 54% of the participants’ believed vaccination is the only solution to this global pandemic, however fairly large percentage of

the participants i.e., 44% of them believed vaccination along with prevention of deforestation, conservation of biodiversity, prohibition of wildlife trade and mitigation of climate change were the more effective strategy to prevent spread of COVID-19 in future (Fig 10).

In the middle age group 50% believed vaccination, while 50% of them believed in order to prevent the future spread of COVID-19 other factors along with vaccination is more effective. However, higher age group relied more on vaccination (60%) (Fig. 11)

DISCUSSION

The study reveals that the Indian public is adequately sensitized with respect to COVID-19, which can be attributed to the Government of India's initiatives to educate the masses through electronic and print media. However, certain questions yielded mixed responses in this survey. For instance, there was confusion among the public regarding the origin of COVID-19. This ambiguity is also observed within the scientific community and governments concerning the virus's origin [14]. Consequently, neutral opinions and disagreements with the theory of animal origin of COVID-19 emerged.

The recent spillover of zoonotic diseases, including COVID-19, is a global cause for concern. Soon after the emergence of COVID-19, debates began regarding the possible reasons for its spread and its potential impact in South Asia [15]. The sudden outbreak of COVID-19 is largely attributed to the weakening of our natural ecosystem due to land use changes [16]. Survey results further substantiate this, as the majority of participants believed that the spread of COVID-19 is human-induced. The acceptance of this perspective, especially among youth, may be influenced by compulsory environmental education introduced by the Government of India [17].

Furthermore, climate change is likely to exacerbate the spread of COVID-19 in the near future. While most participants believe in this connection, there were some who remained neutral. Interestingly, among the higher age group (>45 years), a higher percentage of participants disagreed. This discrepancy could be due to a lack of knowledge and inconclusive evidence regarding the role of climate change in the spread of COVID-19, as portrayed in electronic and print media. The study reveals that climate change is likely to aggravate the spread of COVID-19 in the near future. While most participants believe in this connection, there were some who remained neutral. Among the higher age group (>45 years), a higher percentage of participants disagreed. This discrepancy could be due to a lack of knowledge and inconclusive evidence regarding the role of climate change in the spread of COVID-19, as portrayed in electronic and print media. Consequently, environmental awareness campaigns need to be carried out in India to educate the masses about the spill over and re-emergence of zoonotic diseases and their possible threat under a climate change scenario.

Interestingly, a higher percentage of participants believed in the efficacy of vaccination

in containing COVID-19 [18]. This belief is largely due to sensitization by the Government of India and International Health Agencies [19]. However, youth and middle age groups, in particular, also emphasized the importance of preservation, protection, and conservation of the environment alongside vaccination as an effective long-term strategy to prevent the spread of COVID-19. This positive perspective is crucial because the youth and middle age group will influence the future course of the country.

The study sheds light on the perception of Indian youth and others regarding COVID-19. From this study, it can be concluded that environmental education will better prepare the future generation to cope with environmental challenges, especially related to the spread, containment, and eradication of zoonotic diseases. Adopting sustainable lifestyle practices and formulating environmentally-centric policies will be essential in achieving this adaptation.

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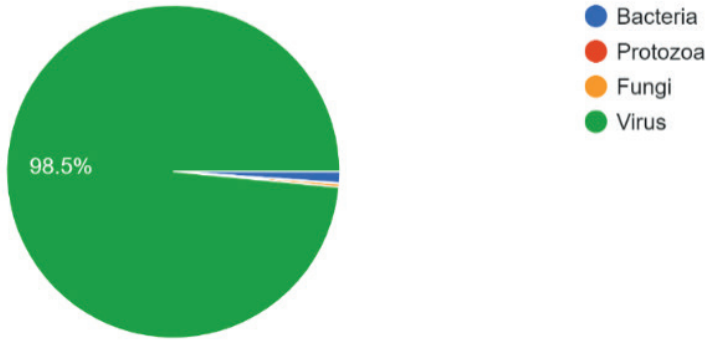

Figure 1. Pie chart showed response of number of participants in percentage on the question (1) COVID-19 is caused by (a) Bacteria (b) Protozoa (c) Fungi (d) Virus (N = 1260; where N is number of responses).

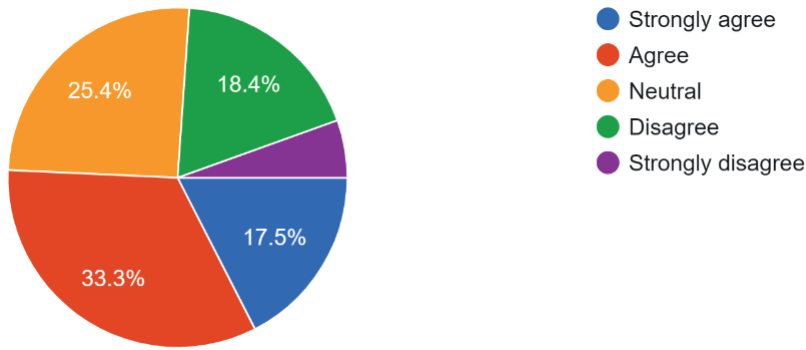

Figure 2. Pie chart showed response of number of participants in percentage on the question (2) Do you think COVID-19 is a zoonotic disease? (Responses 1260).

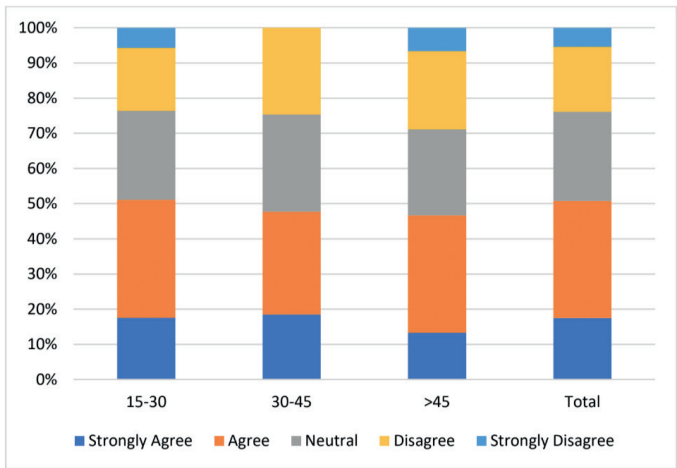

Figure 3. Bar chart showed age-wise distribution of responses of number of participants in percentage on the question (2) Do you think COVID-19 is a zoonotic disease? (Responses 1260).

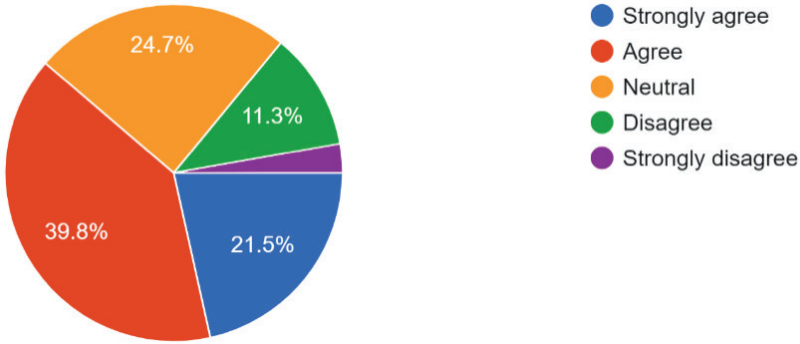

Figure 4. Pie chart showed response of number of participants in percentage on the question (3) Do you think COVID-19 is human induced? (Responses 1260).

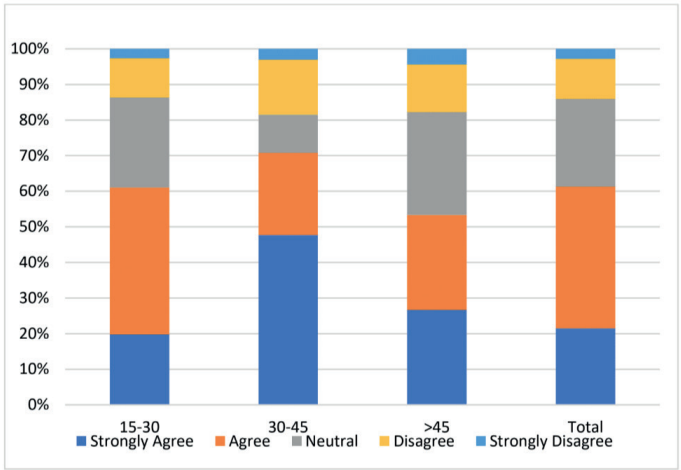

Figure 5. Bar chart showed age-wise distribution of responses of number of participants in percentage on the question (3) Do you think COVID-19 is human induced? (Responses 1260).

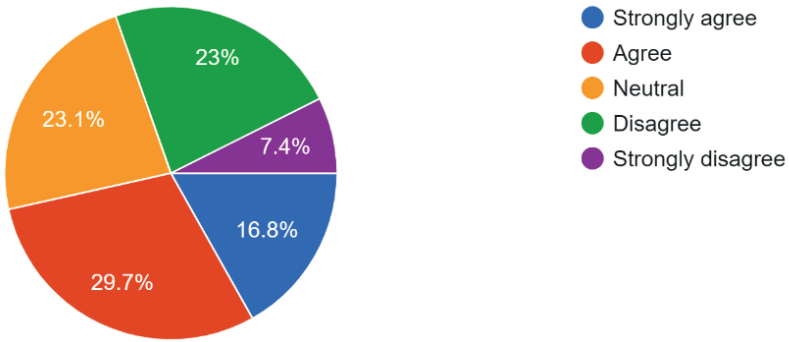

Figure 6. Pie chart showed response of number of participants in percentage on the question (4) Do you think deforestation, land use change, habitat loss, consumption of wild meat is the prominent reason for spread of COVID-19? (Responses 1260).

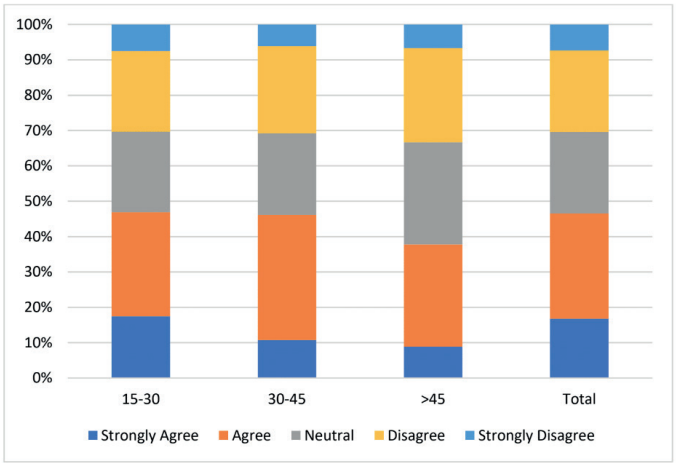

Figure 7. Bar chart showed age-wise distribution of responses of number of participants in percentage on the question (4) Do you think deforestation, land use change, habitat loss, consumption of wild meat is the prominent reason for spread of COVID-19? (Responses 1260).

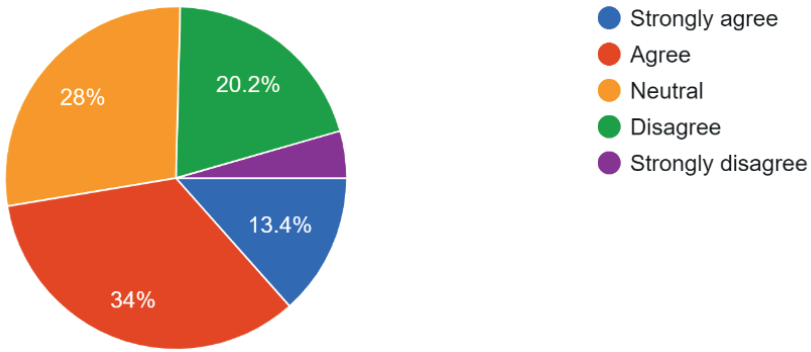

Figure 8. Pie chart showed response of number of participants in percentage on the question (5) Do you think climate change will aggravate the spread of COVID-19? (Responses 1260).

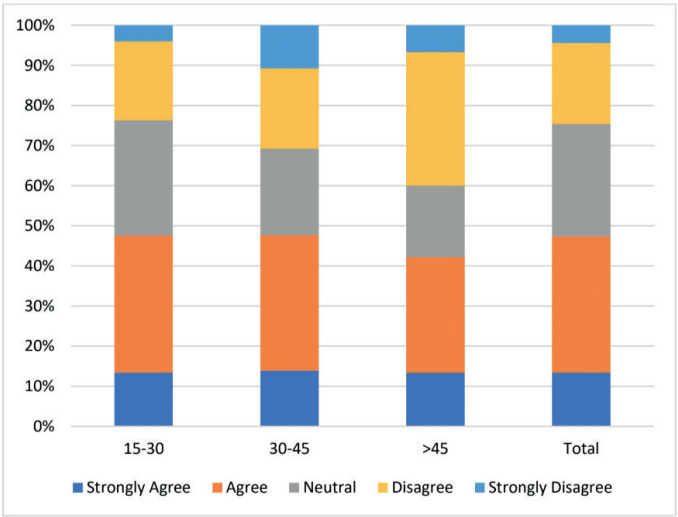

Figure 9. Bar chart showed age-wise distribution of responses of number of participants in percentage on the question (5) Do you think climate change will aggravate the spread of COVID-19? (Responses 1260).

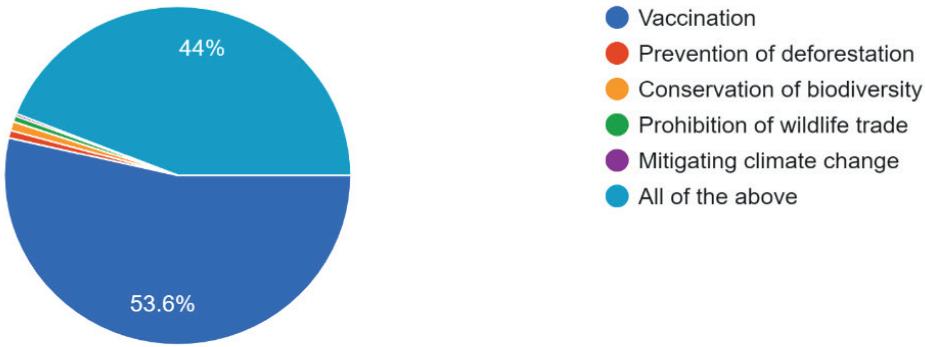

Figure 10. Pie chart showed response of number of participants in percentage on the question (6) What is the best possible way of prevention of COVID-19 in future (a) Vaccination (b) Prevention of deforestation (c) Conservation of biodiversity (d) Prohibition of wildlife trade (e) Mitigation climate change (f) All of the above (Responses 1260).

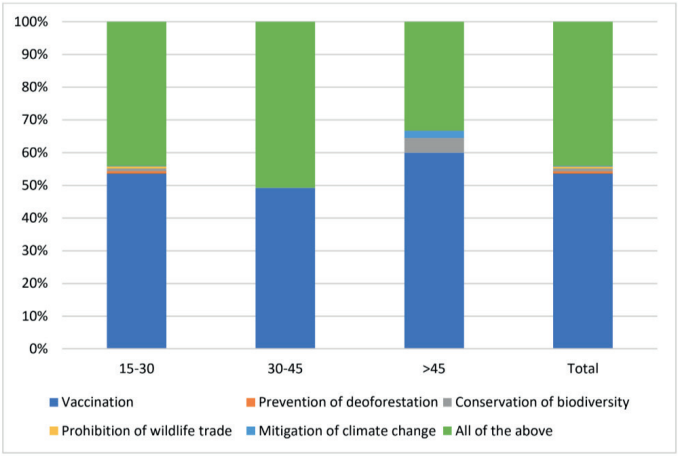

Figure 11. Bar chart showed age-wise distribution of responses of number of participants in percentage on the question (6) What is the best possible way of prevention of COVID-19 in future (a) Vaccination (b) Prevention of deforestation (c) Conservation of biodiversity (d) Prohibition of wildlife trade (e) Mitigation climate change (f) All of the above (Responses 1260).