



## Impact of Infodemic on Public Perception on Covid-19 Pandemic: Web-Based Cross-Sectional Survey

Bogireddy Sahithi\*<sup>1</sup> , K. Sharon<sup>1</sup>, M.V. Rahul Reddy<sup>1</sup>, B.Pranav Bhargav<sup>1</sup> and Dr. G. Narayana<sup>2</sup>

<sup>1</sup>Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research (RIPER) - AUTONOMOUS, Ananthapur,  
Andhra Pradesh – 515721, India.

<sup>2</sup>Associate Professor, Department of Clinical Pharmacy and Pharmacy Practice, School of pharmacy, Kampala International University, Western  
Campus, Uganda

**Abstract:** Infodemic' (an overabundance of information) that makes it tough for people to find responsible sources and reliable guidance when they need it. This generates a need to know whether the public are able to distinguish fake news from true ones and the information sources used. The study aims to determine the impact of infodemic on public perception of health during the COVID-19 pandemic and to assess its impact on the psychological well-being of the public. An online web based cross sectional study was conducted among people who were aged above 15 years. The data was collected through online mode by providing google links to fill the validated questionnaire form through various social media platforms. The questionnaire consists of demographic details, knowledge and practice related questions. The data was analyzed using Chi-square test. A total of 715 responses were considered for analysis in which the majority of the age group belongs to 18- 24 years and mostly living in urban (44%) and rural (41%). Information Sources mostly used include Internet (630), Mobile phone usage (630), and TV (530). Standard (or) Trusted sources according to people were Government websites (407). It was observed that most people have good knowledge about COVID-19 prevention and were practicing the safety measures. The study concludes that availability of abundance of information sources and lack of awareness on how to cross-check made people to follow some activities in the view of protection without knowing the truth. This impact of infodemic can be controlled by health care professionals including pharmacists by giving updated and evidence-based scientific advice on reliable COVID-19 information to their communities via flyers and multimedia.

**Keywords:** Infodemic, Misinformation, Public, Fake News, Information Sources and COVID-19.

---

### \*Corresponding Author

Bogireddy Sahithi , Department of Pharmacy  
Practice, Raghavendra Institute of Pharmaceutical  
Education and Research (RIPER) - AUTONOMOUS,  
Ananthapur, Andhra Pradesh – 515721, India.

Received On 22 June, 2022

Revised On 30 August, 2022

Accepted On 8 September, 2022

Published On 1 November, 2022

---

**Funding** This research did not receive any specific grant from any funding agencies in the public, commercial or not for profit sectors.

**Citation** Bogireddy Sahithi, K. Sharon, M.V. Rahul Reddy, B.Pranav Bhargav and Dr. G. Narayana , Impact of Infodemic on Public Perception on Covid-19 Pandemic: Web-Based Cross-Sectional Survey.(2022).Int. J. Life Sci. Pharma Res.12(6), P87-95  
<http://dx.doi.org/10.22376/ijpbs/lpr.2022.12.6.P87-95>

This article is under the CC BY- NC-ND Licence (<https://creativecommons.org/licenses/by-nc-nd/4.0>)



Copyright @ International Journal of Life Science and Pharma Research, available at [www.ijlpr.com](http://www.ijlpr.com)

## I. INTRODUCTION

*Infodemic* is a blend of *information* and *epidemic*. An *infodemic* is used when information, predominantly wrong or unscrutinised information, disseminates massively as an infection shall throughout an epidemic. *Infodemics* are exceptionally frequent in the midst of recession or calamities, perhaps not unsurprisingly, actual disease epidemics. The internet and social media, in actuality, have increased at ease for *infodemics* to diffuse. The term *infodemic* was coined by global dealings Professor David Rothkopf in an article from May 11, 2003, amid the deadly outbreak of SARS (Severe Acute Respiratory Syndrome) that year. In that article, Rothkopf argued that an *infodemic* was constructing the SARS eruption "harder to control and contain."<sup>1</sup> World Health Organization (WHO) well-defined the term *infodemics* as "an overabundance of information – some may be accurate and some not- that makes it hard for the people to find trustworthy sources and reliable guidance when they need it" the term was invented to categorize more or less of the common assumptions, smirch and deceiving conceptions for the period of this 2020 pandemic.<sup>2</sup> In the short term of this outbreak, the World Health Organization (WHO) Director-General Tedros Adhanom Ghebreyesus concentrated his remarks on February 15, 2020: "We're not just fighting an epidemic; we're fighting an infodemic. Fake news spreads faster and more easily than this virus, which is just as dangerous."<sup>3</sup> A particular study complements the WHO charter by giving a first wide-ranging roadmap on what way to combat an infodemic. The present infodemic is a catastrophe to refine the complete magnitude of information that is stirring on four levels: (1) Science, (2) Policy and practice, (3) News media, and (4) social media. Gunther Eysenbach has proposed 'The wedding cake' model that demonstrates the four levels as layers where their layers are comparative to the volume of information created.<sup>4</sup> The model also displays some information tides and knowledge transformation deeds that yield amongst these dissimilar levels. Science is the slightest layer of the wedding cake in positions of the volume of information, and it is illustrated at the uppermost part of the information wedding cake, which signifies a severe and discerning information assembly series. Clearly, misinformation can also be established at this time, perhaps summarized by the number of retractions that resulted in a reduction in June 2020, positions at a reduced amount of two dozen retracted articles, but this number may rise. With above 26,000 COVID-19 articles published in PubMed, this exemplifies less than 0.1% of the indexed research, although there may be an increased rate in the anterior segment of unviewed preprints, some of which may never see the light of journal publication, which may be another metric for the prevalence of scientific misinformation. The main problem is not so much the prevalence of misinformation in the science layer, but the challenge of translating this information into actionable recommendations and conveying conclusions to different audiences and stakeholders in other layers, illustrated by the knowledge translation. Social media is portrayed as the biggest and latter section of the wedding cake, expressing the massive volume of almost unrefined and unrestrained information produced or enlarged by the community. Information in social media is obviously created by science organizations, policymakers, health care organizations, and reporters. The Information "Cake" Model. The four pillars of infodemic administration are (i) information supervising (infoveillance); (ii) constructing eHealth Literacy and science literacy; (iii) reassuring

knowledge enhancement and quality upgrading processes for information earners, such as fact inspection and peer evaluation; and (iv) Knowledge Translation, meaning to translate knowledge from one layer to another, while diminishing altering factors.<sup>4</sup>

### I.1 Theoretical Background

Among the major sources of information such as Newspapers, Journals, Health Magazines, and social media; the internet provides enormous opportunities for social media as it together diminishes the price of spawning and propagating the information, permitting misinformation and overstated scriptures to proliferate. Once local information is disseminated, it can quickly become global, with the idea more confined or delayed by geography. This generated a series of studies on the dissemination of information, the propagation of rumors and the consequent behavioral changes.<sup>5</sup> Various online social media sources such as Facebook, WhatsApp, Twitter, Instagram and other e-health records are involved in Infodemiological studies.<sup>6</sup> In recent times, 2019 coronavirus disease (COVID-19) has become a global pandemic, constituting a major public health challenge for many nations. Concomitantly, a Myriad of rumors and chunks of misinformation have been spreading on various social media platforms regarding the etiology, outcomes, disease prevention and management.<sup>7</sup> The more focusing issue is that fake news spreads more rapidly on social media than reliable sources, thereby depleting the legitimacy of the news biome. This issue is fetching an immense public health concern due to the disclosure of the people to the enormous capacity of information that can prime to mass media exhaustion, triggering the termination of healthy activities that are vital to safeguard the entities. Moreover, misinformation and rumors concerning the COVID-19 are deterring the preparation of healthy routines (such as hand washing and social distancing) and endorsing hazardous health rehearses that may increase the spread of the virus and eventually ensue in deprived physical and mental skepticism and sanitation consequences.<sup>8</sup> There are innumerable infodemic monikers identified of COVID-19 that infringed public communication over various cities in Italy, misinformation in the time of pandemic can excessively affect public health communication and create xenophobia between nations, this type of misleading information may have resulted in the instigation of angry online conversations among netizens in Italy. Dispersion of fake news and racism over social media has become a widespread practice, and the COVID-19 outbreak is no exception.<sup>9</sup> Misinformation has increased around the world, tapping into overwhelming public interest in the development of effective vaccines and therapies for COVID-19, some businesses are promoting stem cell-based interventions or exosome products that supposedly treat or prevent COVID-19 or the acute respiratory distress syndrome (ARDS) experienced by some victims of the virus.<sup>10</sup> For example, in Nigeria, where there were lots of cases found of an overdose of chloroquine (a drug that is used to treat malaria) after the promotion of its effectiveness in treating the COVID-19 through the news media. A certain study analyzed the overuse of information and emotional exchanges among the public on the internet from people's opinions and concerns that in turn affect people's cognition and behavior, where there could be the dissemination of misinformation, which may lead to inappropriate clinical pieces of advice or unnecessary anxiety in between the people. Another example from India, a father of three was reported to commit suicide upon confirming that

he had been diagnosed with COVID-19.<sup>11</sup> This infodemic not only affects the general public but also makes them interfere in the treatment and management practices of COVID-19 by healthcare professionals. Understandably, people living in quarantine or isolation are more likely to experience psychological stress and adverse health outcomes, which may provoke them to learn more about the disease, in such situations, there comes a need for the proper channel of correct information<sup>12</sup>. This need for correct information was acknowledged by WHO and was partnered with several social media platforms namely- Facebook, WhatsApp, Google, LinkedIn, Microsoft, Twitter, and YouTube, that agreed to stamp out the fraud and misinformation and agreed to promote critical updates on health care agencies. Same as in India, the government has advised leading social media companies like Facebook, YouTube, Tik-Tok, Share Chat, and Twitter to stop publishing misinformation, as it creates panic among people.<sup>3</sup> The supremacy of internet exploration statistics is being progressively acknowledged in public health emergencies. Despite this, the role of internet monitoring (also referred to as infoveillance or infodemiology) in tackling public behavioral reactions, responses and rumors in an epidemic still remains underexplored.<sup>13</sup> While a number of studies have been conducted using Infodemiological methods as part of COVID-19 research, an inadequate sum of studies have observed the scope of COVID-19-related misinformation on the cyberspace.<sup>14</sup> Thus, an enquiry of exposure to both social media and mass media and association to the psychobehavioral health consequences of the public is required, in the COVID-19 epidemic, it is uncertain that which type of media impacts the public and outlines their psychobehavioral responses.<sup>15</sup> This evidence shows that almost all of the departments or stakeholders such as Epidemiology and Public Health, Applied Math and Data Science, Digital Health and Technology, Law and Governments have to be involved in managing the infodemic. Especially healthcare professionals who will be in contact with a lot of patients/general public visiting hospitals suffering from infections or for screening or to clarify their doubts.

## 1.2 Hypothesis

The infodemic is spreading very rapidly, it is necessary to know whether the public are able to distinguish fake news from true ones, sources of information, beliefs and practices towards COVID-19 information received. Based on this, the study hypothesis was framed "to associate the public perception towards COVID-19 information".

## 2. MATERIALS AND METHODS

### 2.1 Subjects and Methods

Web based Cross sectional survey.

### 2.2 Study Site and Duration

Community based online questionnaire form was used and study was done for 6 months

### 2.3 Study Population and Sample Size

All the participants who are having access to the major information sources (TV, Newspaper, Social media access) are excluded in the study. Repeated responses from a single person are excluded. The study was conducted in 724 persons.

## 2.4 Study Procedure and Study Tool

The study protocol was put forward to the institutional review board for permission. After receiving the approval, literature review was conducted to gather the most circulated information and articles related to the infodemic and health seeking behavior of the public. Based on the literature search, a study tool was developed in the form of a questionnaire which helps in assessing public perceptions. The validation of the questionnaire was done by doing a pilot study and got reviews from experts for its relevance, clarity and understanding. The validated questionnaire was converted into an online survey form. The online survey form will collect the electronic consent, demographic details along with the questionnaire. The online survey form was then circulated through social media and the data was collected from responders who were willing to participate in the study. The collected data was used for analysis and interpretation.<sup>3</sup>

## 2.5 Study Tool (Questionnaire) Development

Questionnaire was done based on literature review. Articles were collected by using Pub med and WHO updates regarding COVID-19 infodemic. From the collected articles we had taken information related to COVID-19. From that information we made a draft questionnaire which consists of questions related to COVID-19. Draft questionnaire consists of 4 sections.

Section I- Information sources.

Section II-Knowledge on COVID-19 Information.

Section III- Practice based on COVID-19 information.

Section IV- Effect of Infodemics

## 2.6 Validation

The draft questionnaire was validated by doing pilot study and collecting expert's opinions. The questionnaire was circulated to health care professionals and academicians having experience in research activities. The suggestions from the experts were used to update the questionnaire content. The questionnaire was circulated to a small sample of participants and the filled questionnaire was analyzed, the responses from pilot study were used to evaluate the questionnaire using Cronbach alpha. The Cronbach alpha value was found to be 0.730. Based on the pilot study report and expert opinions, questionnaire was corrected and finalized. The validated questionnaire was used to develop the online survey form was and it was circulated.

## 3. STATISTICAL ANALYSIS

Descriptive analysis and Chi square test<sup>3</sup> using "IBM SPSS Statistics Version 26". Probability (p) value less than 0.05 was considered statistically significant. Data was presented in the form of frequency and percentages.

## 4. RESULTS

This particular study was conducted for 6 months where a total of 724 responses were submitted in which 9 responders disagreed to participate in the study. Therefore 715 responses were considered for analysis.

Table. I: Age and gender-wise Distribution of respondents		
Age	Gender	
	Male	Female
<18	7(19.44%)	29(80.55%)
18-24	191(35.63%)	345(64.36%)
25-34	61(61%)	39(39%)
35-44	11(45.83%)	13(54.16%)
45-54	3(20%)	12(80%)
>55	3(75%)	1(25%)

The respondents were distributed according to age groups <18, 18-24, 25-34, 35-44, 45-54,>55 majorities of the respondents were in between 18-24 years (74.96%) age group in which 38.60% were males and 61.4% were females as mentioned in the Table no I. The characteristics were compared within regions, urban (44%), semi-urban (15%) and rural (41%) populations in which the respondent's education qualifications where the majority are undergraduates (63.21%), PG/PhD (31.88%), Intermediate (3.91%). Health care professionals in the respondent's families wherein the majority of 67% and 18% of their family members were affected with Covid and 95% of them were not suffering from any type of disease, and the majority of them about 60.3% haven't undergone any type of Covid-19 screening and 16.64% and 13.14% did Rapid Test and RT-PCR respectively.

#### 4.1 Section I - Information sources.

This section consists of questions related to information sources on COVID-19 and how people are going to use/assess the information sources to obtain health-related information. The respondents whether they heard the word "infodemic" or not and the majority answered "No". These parameters were significantly affected by Education ( $p=0$ ), Health care professionals in your family ( $p=0$ ) and Undergone COVID-19 screening ( $p=0.024$ ). The majority of respondents searched for Health-Related Information during the Covid-19 pandemic.

These parameters were significantly affected by Age, Region, Education, and Healthcare professionals in your family, questions like whether you or your family members were affected with COVID-19 and Undergone for COVID-19 screening where  $p$  is 0.004, 0.002, 0.006, 0.001, 0.019 respectively. Most people were found using Mobile Phones (88.17%) and Internet (84.19%), TV (74.12%), and (35.8%) were using laptops. These parameters were significantly affected by Age, Gender, Region, Education, Any Healthcare professional in your family, You or your family members affected with COVID-19 and Undergone COVID-19 screening (Where  $p$  is 0, 0.001, 0, 0, 0.01, 0.001, 0.042 respectively). Mostly used apps by the public, the majority of them used WhatsApp (85.73%), YouTube (85.73%), Instagram (52.58%), Health Apps (45.03%), Facebook (43.35%), News Apps (37.90%), and Twitter (20.69%). These parameters were significantly affected by Age, Gender, Region, Education and whether you or your family members were affected with COVID-19 (Where  $p$  is 0, 0, 0.017, 0, and 0.05 respectively). Mostly used sources by the people to update Health information according to the Fig.No.I Social Media was mostly used for about (62.93%), Newspapers and News Channels (60.27%), Government Websites (50.48%), Health Websites (42.8%), Health Magazines (18.2%). These parameters were significantly affected by Age ( $p=0.002$ ), Education ( $p=0$ ) and Any Healthcare professional in your family ( $p=0.005$ ).

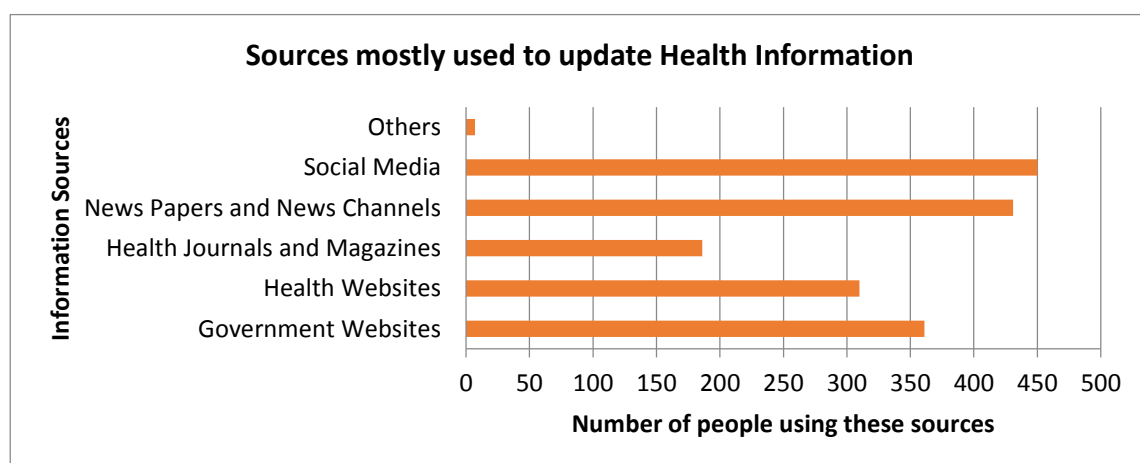
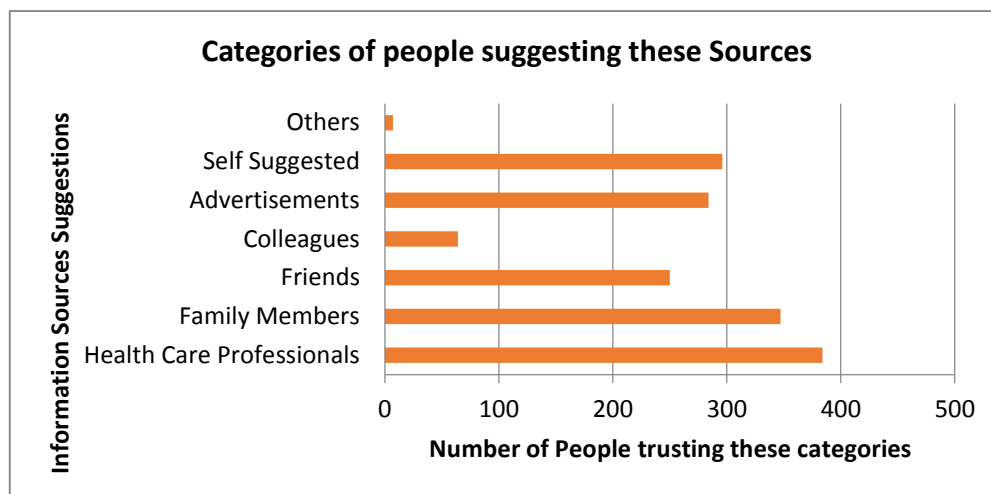


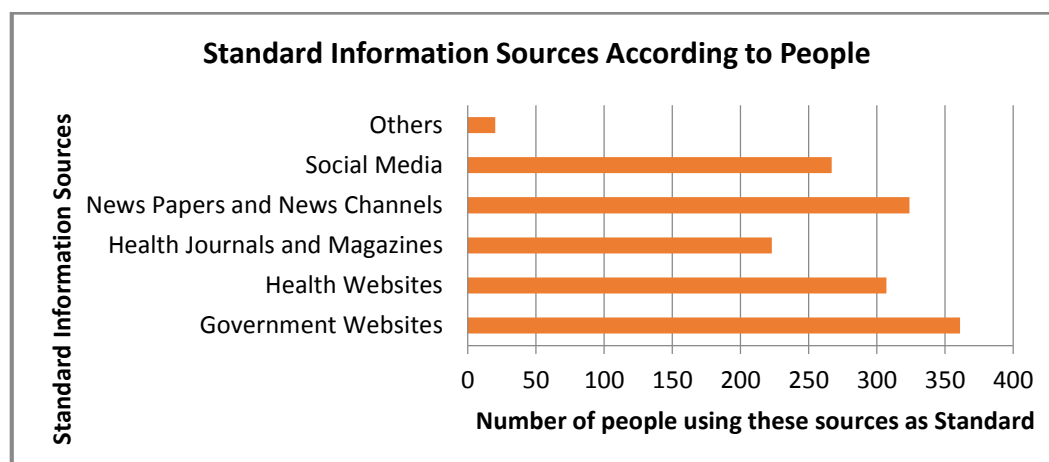
Fig. No. I- Sources Mostly used to update Health Information by responders



**Fig No. 2 Categories of people who gave suggestion about the sources**

Fig. No. 2 presents the categories of people who gave suggestions about the information sources where the majority were Health Care Professionals with a percentage of (53.70%) followed by Family Members (48.53%) and (41.39%) were self-

suggested, (39.72%) took suggestions through advertisements and remaining by Friends (34.96), Colleagues (8.95%) and Others. These parameters were significantly affected by Undergone for COVID-19 screening ( $p=0.014$ ).



**Fig. No. 3 Standard Information sources according to responders**

Fig. No. 3 shows the standard information sources according to people are Government Websites (56.92%), Newspapers and News Channels (45.31%), Health Related Websites (42.93%), Social Media (37.34%), Health Magazines and Journals (31.18%). These parameters were significantly affected by Gender ( $p=0.014$ ) and Education ( $p=0.012$ ).

#### 4.2 Section II

Knowledge on COVID-19 Information- This section consists of questions related to knowledge on COVID-19 information

which is useful to assess people's consciousness about COVID-19 health information. Information regarding COVID-19 was given as statements the participants were enquired whether they believed it true or not. Majority of knowledge-questions were answered by the people correctly showing that they answered questions depending on the information they received. Table No.2 shows how most people were getting false information, using false information sources. Although it shows that individual metrics affected some knowledge points, On the whole, knowledge score was not affected by any of the determinants

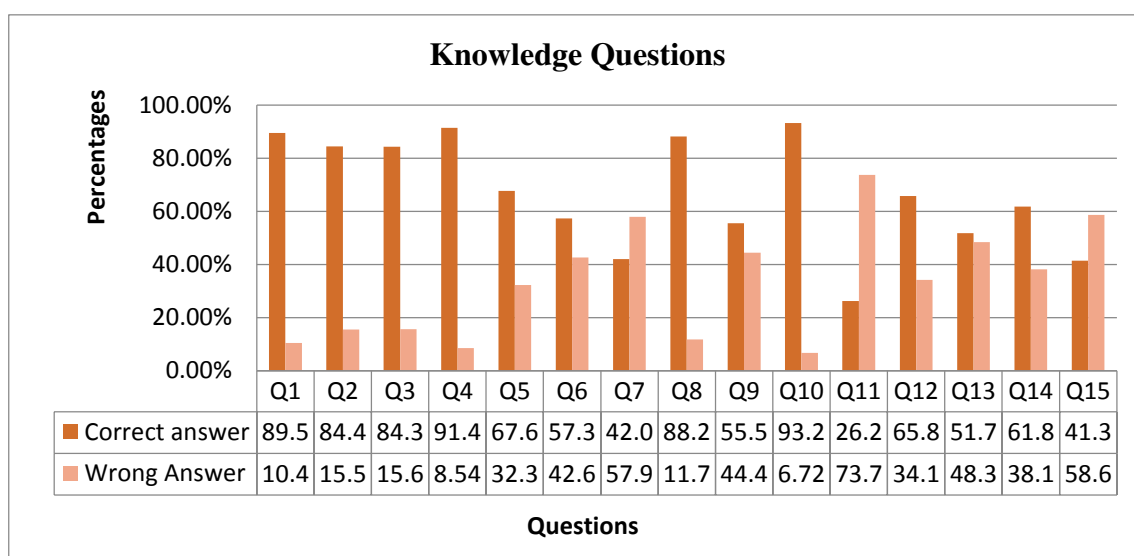
**Table No.2: Knowledge-based questions**

S. No.	Statements	No. of Correct Responses
1	The Coronavirus only affects older people	640(89.51%)
2	People having other diseases will only suffer from COVID-19	604(84.47%)
3	People having other diseases are more likely to get seriously ill due to COVID-19	603(84.33%)
4	COVID-19 is transmitted through Houseflies	654(91.46%)
5	COVID-19 cannot be transmitted in areas with hot and humid climate	484(67.69%)
6	Feeling discomfort after holding the breath for more than 10 seconds indicates COVID-19	410(57.34%)

7	Applying alcohol or chlorine in the form of sanitizer all over protects you from COVID-19	301(42.09%)
8	Drinking alcohol can protect you from COVID-19 infection	631(88.25%)
9	Wearing masks alone can protect you from COVID-19 infection	397(55.52%)
10	Social distancing prevents spreading of COVID-19 infection	667(93.28%)
11	Prolonged use of mask causes breathing problems	188(26.29%)
12	An Ultraviolet disinfection lamp can kill coronavirus?	470(65.73%)
13	Eating garlic and hot pepper can prevent COVID-19 infection	340(51.74%)
14	Whether vaccination (Pneumonia vaccines) can protect you against COVID-19	442(61.81%)
15	Antibiotics are effective in preventing and treating COVID-19	296(41.39%)

As mentioned in the Table No.2 The statements 2,5,6,7,8,9,11,13,14 were statistically significant with age and statements 1,2,13,14 were statistically significant with gender and statements 1,2,3,4,5,6,7,8,9,13,14,15 were statistically significant with Region. Statements 4,5,6,7,8,9,10,11,13,14

were significant with education and statements 5,7,9,13,15 were statistically significant with any health care professionals in the family and statements 9,10,13 with any family members affected with COVID 19 and statements 5,9,13 were statistically significant with undergoing COVID-19 screening.



**Fig No. 4 Responses towards knowledge questions**

Fig No. 4 shows that many of the responders have good knowledge about COVID-19 but still there were few areas where the responders still have some wrong beliefs such as believing mask use may lead to breathing problems and antibiotics are effective in treating COVID-19 and about some preventing practices such as applying sanitizer and eating raw garlic and hot-pepper.

### 4.3 Section III

Practice based on COVID-19 information that consists of questions related to COVID-19 information and how people use the information and adapt that to their lifestyles.

Table No.3: Responses for Practice-based Questions			
S.No	Questions	Responses	Count
1	Are you using alcohol sanitizer or chlorates based supplements regularly?	No	132(18.46%)
		Yes	583(81.53%)
2	Do you disinfect the things you brought home and you touch?	No	157(21.95%)
		Yes	558(60.90%)
3	Do you practice wearing a mask?	No	65(9.09%)
		Yes	650(90.90%)
4	Whether you disinfect/wash the mask you wear for a second time?	No	129(18.04%)
		Yes	586(81.95%)
5	Do you dispose of the mask once it is soiled (becomes wet)?	No	135(18.88%)
		Yes	580(81.11%)

As mentioned in Table No.3, Majority of people were using alcohol sanitizer or chlorates-based supplements, disinfecting their homes and things regularly, practicing wearing masks, disinfecting/washing their used masks and also disposing of the

masks once it becomes wet. The majority of people were using the same mask for 6 hours, some for about 6-8 hours, some throughout the day and some for more than one day. They mostly used Cotton/Cloth masks, some were using N-95,



others Respirators and some used Disposable Surgical Masks. People were disinfecting/washing their used masks, where a majority washed with Hot Water, some with Disinfectants, some with only Tap water, some sundried their masks after

they use. Most of the people discarded the masks in Trash Bin/Closed Bins, some discarded in open places and some burned it.

#### 4.4 Section IV- Effect of Infodemics. This section describes how infodemic affected the people's life

**Table No.4: Effect of Infodemics**

S. No	Questions	Count
1	Do you feel getting updated information is your right?	618(86.4%)
2	Does rapidly changing COVID information affect your personal and professional life?	564(78.8%)
3	Do you feel updating yourself regularly with health information is helping you in preventing you from diseases?	654(91.4%)

As mentioned in the Table No.4, 86.4% of respondents feel that getting updated/up-to-date information is their right, 78.8% of them answered that Covid-19 information is affecting their personal and professional life whereas about 91.4% feel that updating themselves regularly with health information was helping by preventing them from diseases. The determinants, who heard the word infodemic ( $P = 0.021$ ); using sources to collect and update the information ( $P = 0.029$ ); felt their information was true ( $P \sim 0$ ); knowledge factor corona affecting older people ( $P = 0.033$ ); certain practices such as wearing mask ( $P = 0.049$ ), disinfecting/washing mask for second time ( $P = 0.033$ ), were having a significant influence on feeling that getting updated information is a right. The determinants of searching for health related information during pandemic time ( $P \sim 0$ ); need to recheck the information ( $P = 0.002$ ); knowledge factor stating consumption of garlic and hot pepper preventing COVID-19 ( $P = 0.025$ ); practices of disposing soiled mask ( $P \sim 0$ ); feeling breathing discomfort while wearing mask ( $P \sim 0$ ); drinking hot water ( $P = 0.001$ ); eating garlic /pepper ( $P \sim 0$ ) and using antibiotics ( $P = 0.005$ ) were having a significant impact on COVID-19 rapidly changing information affecting personal and professional life. Regularly updating with health information helps in preventing diseases was significantly impacted by feeling of finding true information ( $P = 0.012$ ); the sources used to recheck the information ( $P = 0.034$ ); knowledge of social distance preventing COVID-19 spreading ( $P = 0.002$ ); practices such as regular use of alcohol sanitizer/ chlorate based supplements ( $P \sim 0$ ); wearing mask ( $P \sim 0$ ); hours using same mask ( $P = 0.03$ ); disinfecting or washing the mask ( $P = 0.005$ ); drinking hot water ( $P \sim 0$ ); eating garlic /pepper ( $P = 0.006$ ) and verifying the health information ( $P = 0.003$ ). Practices such as disinfecting the things that we touch and bring home and maintaining social distance had a significant ( $P < 0.05$ ) impact on all the questions mentioned in the practice table.

## 5. DISCUSSION

The current study was done to identify the impact of infodemic on public perception of the COVID-19 pandemic. As it is an emerging area of research especially where general public perceptions in relation to infodemic were being collected so there came the need for the development of a proper tool to assess it. Almost all parameters so far were included in the questionnaire that can help in correlating infodemic and public perception. A total of 715 completed responses were received, mostly from the age group of 18-24 years; this may be due to the result of using an online questionnaire where the link was circulated among student groups as a snowball technique. This was similar to a cross-sectional online survey conducted by Rakesh Dutta et.al., to identify the information

sources for health care professionals in India.<sup>3</sup> In our study, around 84% were having access to the Internet, mostly 85% were using social media-related apps while only 37.9% and around 45% were using news apps and health apps respectively. The study by Rakesh Dutta et.al. shows that the major sources they were using to update were official government websites (63.1%), Online news (41.7%) whereas in our study 62.9% were following social media; 60.28% were following Newspapers, news channels and only 50.49% were following Government websites to update health related information.<sup>3</sup> Availability/ease of use of social media, news channels and newspapers, lack of outreach to standard Government websites have prompted people to opt for the former sources to update their information.<sup>13</sup> Though 56.92% of our study population believe Government websites as the standard source and only 37.34% say social media. It is clear from this that social media became a major source of information whether it may be a fact or myth<sup>14</sup> and 47.2% of respondents of Rakesh Dutta, agree that social media is a major source of misinformation.<sup>3</sup> A study by Jay Amol Bapaye et al., to assess the demographic factors influencing the impact of coronavirus-related misinformation on what's-app states that old people and elementary occupations were more vulnerable to the misinformation circulated on what's-app.<sup>11</sup> It was shown that social media can act as a useful means of circulating health information in a study by Yulan Lin et. al.<sup>15</sup> It was reported that half of the German population were found to have inadequate levels of health literacy during the COVID-19 pandemic according to a study by Orkan Okan et al., using HLS-COVID-Q22.<sup>16</sup> In our study, mean value of knowledge scores was found to be 14. Arazramazan Ahmad et al. and Wonkwang jo both studies stated that social media played a role in spreading anxiety about COVID-19,<sup>18</sup> especially among youth.<sup>10,17</sup> Similarly a study by Michael Y Ni et al., suggested cautious usage of the internet as social media may make a toll on mental health.<sup>19</sup> 30% of the respondents from the Rakesh Dutta study agreed that an overload of information was causing panic among the public.<sup>3</sup> In our study also 78.88% of the respondents agreed that rapidly changing COVID-19 information was affecting their personal and professional life though 86.43% have stated that getting updated information is their right and 91.47% mentioned that regularly updating health information will help them in preventing/ protecting them from diseases, 81.54% have responded that they verified the information related to health. In our study, we also tried to explore the correlation between the knowledge they acquired from various information sources and the practices they adopted during COVID-19 Pandemic.<sup>20</sup> It was found that participants have adopted certain practices such as wearing a mask; disinfecting all the things they touch, disinfecting/ washing the reusable mask, discarding the used mask/ soiled

mask, and drinking hot water to prevent them from COVID-19, using antibiotics<sup>21</sup>. A study conducted by Mohammed Yesuf have also observed that 47% of the respondents in their study had good practices to prevent COVID-19. Similarly a study directed at Addis Zemen Hospital of Northwest Ethiopia and amongst Dessie city inhabitants in which the occurrence of good practice was 52.7% 44.6% respectively. So, it can be seen that most of the people were aware and had been practicing COVID-19 preventive strategies as per some studies.<sup>7,22-25</sup> The magnitude of COVID-19 prevention implementation by this study is moderately lesser than those studies supervised among Dessie health center visitors and Amhara region health care staffs in which 58.3% and 62% of the contestants had decent COVID-19 prevention practice.<sup>26-27</sup> As mentioned earlier, this is a new area of research and we tried to explore this topic in a deeper way but there are certain limitations which can't be ignored without addressing. The most important one is being an online survey where the responses can't be verified and the snowball technique used can't generalize the results. Some of the responses may not reflect the true answers. As we have done this study to explore, we used both dichotomous and multiple component types of questions to understand the basic phenomenon of infodemic, so a focused research questionnaire has to be improvised. Health care professionals play a major role in controlling these problems due to infodemic including pharmacists for giving updated and evidence-based and also the government plays an important role on providing scientific advice on reliable COVID-19 information to their communities via flyers, multimedia and also by updating themselves with eHealth knowledge.<sup>7-8,28</sup>

## 6. CONCLUSION

The study results concluded that people of the age group between 18-24 years were mostly using the information sources mainly Internet, Mobile phones and TV and majority

of them belong to urban population. This availability of sources has led to the access of abundance of information where only few people are smart enough to cross-verify and to take a decision and the rest are being confused. It has been observed that majority of participants were following certain practices which were identified as myth by the participants itself. It shows the impact of infodemic, adapting certain practices in order to protect oneself despite of not believing that information. Health care professionals play a major role in controlling these problems due to infodemic including pharmacists for giving updated and evidence-based scientific advice on reliable COVID-19 information to their communities via flyers and through multimedia.

## 7. ACKNOWLEDGEMENTS

We would like to express our utmost gratitude due to endless support from the faculty of Raghavendra Institute of Pharmaceutical Education and Research (RIPER) and Physicians of Rural Development Hospital (RDT) Bathalapalli.

## 8. AUTHOR'S CONTRIBUTION STATEMENT

Bogireddy Sahithi conceptualized the study. Bogireddy Sahithi, K. Sharon, M.V. Rahul Reddy, Pranav Bhargav designed the study. K. Sharon, M.V. Rahul Reddy, Pranav Bhargav collected the data. All the authors involved in analyzing the data and Dr G Narayana provided the statistical inputs. K. Sharon, M.V. Rahul Reddy, Pranav Bhargav prepared the draft manuscript and Bogireddy Sahithi and Dr G Narayana provided the inputs and finalized the manuscript. All the authors read and approve the final version of the manuscript.

## 9. CONFLICT OF INTEREST

Conflict of interest declared none.

## 10. REFERENCES

1. What is an infodemic? [internet]; 2021. Dictionary.com [cited Mar 6 2021]. Available from: <https://www.dictionary.com/e/pop-culture/infodemic>.
2. 1st WHO Infodemic Management training [internet]; 2021. Who. Int [cited Mar 4 2021]. Available from: <https://www.who.int/news/item/30-10-2020-start-of-1st-who-infodemic-management-training>.
3. Datta R, Yadav AK, Singh A, Datta K, Bansal A. The infodemics of COVID-19 amongst healthcare professionals in India. *Med J Armed Forces India*. 2020 Jul;76(3):276-83. doi: 10.1016/j.mjafi.2020.05.009, PMID 32773929.
4. Eysenbach G. How to fight an infodemic: the four pillars of infodemic management. *J Med Internet Res*. 2020;22(6):e21820. doi: 10.2196/21820, PMID 32589589.
5. Casigliani V, De Nard F, De Vita E, Arzilli G, Grosso FM, Quattrone F et al. Too much information, too little evidence: is waste in research fuelling the covid-19 infodemic? *BMJ*. 2020;370:m2672. doi: 10.1136/bmj.m2672, PMID 32631897.
6. Turner L. Preying on public fears and anxieties in a pandemic: businesses selling unproven and unlicensed "stem cell treatments" for COVID-19. *Cell Stem Cell*. 2020;26(6):806-10. doi: 10.1016/j.stem.2020.05.003, PMID 32464095.
7. Chong YY, Cheng HY, Chan HYL, Chien WT, Wong SYS. COVID-19 pandemic, infodemic and the role of ehealth literacy. *Int J Nurs Stud*. 2020;108:103644. doi: 10.1016/j.ijnurstu.2020.103644, PMID 32447127.
8. Marwitz KK. The pharmacist's active role in combating COVID-19 medication misinformation. *J Am Pharm Assoc* (2003). 2021;61(2):e71-4. doi: 10.1016/j.japh.2020.10.022, PMID 33199166.
9. Tangcharoensathien V, Calleja N, Nguyen T, Purnat T, D'Agostino M, Garcia-Saiso S et al. Framework for managing the COVID-19 infodemic: methods and results of an online, crowdsourced WHO technical consultation. *J Med Internet Res*. 2020;22(6):e19659. doi: 10.2196/19659, PMID 32558655.
10. Anwar A, Malik M, Raees V, Anwar A. Role of mass media and public health communications in the COVID-19 pandemic. *Cureus*. 2020 Sep 14;12(9):e10453. doi: 10.7759/cureus.10453, PMID 33072461.
11. Bapaye JA, Bapaye HA. Demographic factors influencing the impact of coronavirus-related misinformation on WhatsApp: cross-sectional questionnaire study. *JMIR Public Health Surveill*. 2021 Jan 30;7(1):e19858. doi: 10.2196/19858, PMID 33444152.
12. Erku DA, Belachew SA, Abrha S, Sinnollareddy M, Thomas J, Steadman KJ, et al. When fear and



- misinformation go viral: pharmacists' role in deterring medication misinformation during the "infodemic" surrounding COVID-19. *Res Social Adm Pharm.* 2021;17(1):1954-63. doi: 10.1016/j.sapharm.2020.04.032, PMID 32387230.
13. Hou Z, Du F, Zhou X, Jiang H, Martin S, Larson H et al. Cross-country comparison of public awareness, rumors, and behavioral responses to the COVID-19 epidemic: infodemiology study. *J Med Internet Res.* 2020;22(8):e21143. doi: 10.2196/21143, PMID 32701460.
  14. Rovetta A, Bhagavathula AS. Global infodemiology of COVID-19: analysis of google web searches and Instagram hashtags. *J Med Internet Res.* 2020 Aug 25;22(8):e20673. doi: 10.2196/20673, PMID 32748790.
  15. Lin Y, Hu Z, Alias H, Wong LP. Influence of mass and social media on psychobehavioral responses among medical students during the downward trend of COVID-19 in Fujian, China: Cross-Sectional Study. *J Med Internet Res [study].* 2020 Jul 20;22(7):e19982. doi: 10.2196/19982, PMID 32584779.
  16. Okan O, Bollweg TM, Berens EM, Hurrelmann K, Bauer U, Schaeffer D. Coronavirus-related health literacy: A cross-sectional study in adults during the COVID-19 infodemic in Germany. *Int J Environ Res Public Health.* 2020 Jul 30;17(15). doi: 10.3390/ijerph17155503, PMID 32751484.
  17. Jo W, Lee J, Park J, Kim Y. Online information exchange and anxiety spread in the early stage of the novel coronavirus (COVID-19) outbreak in South Korea: structural topic model and network analysis. *J Med Internet Res.* 2020 Jun 2;22(6):e19455. doi: 10.2196/19455, PMID 32463367.
  18. Ahmad AR, Murad HR. The impact of social media on panic during the COVID-19 pandemic in Iraqi Kurdistan: online questionnaire study. *J Med Internet Res.* 2020 May 19;22(5):e19556. doi: 10.2196/19556, PMID 32369026.
  19. Ni MY, Yang L, Leung CMC, Li N, Yao XI, Wang Y, et al. Mental health, risk factors, and social media use during the COVID-19 epidemic and cordon sanitaire among the community and health professionals in Wuhan, China: cross-sectional survey. *JMIR Ment Health.* 2020 May 12;7(5):e19009. doi: 10.2196/19009, PMID 32365044.
  20. Hu Z, Yang Z, Li Q, Zhang A, Huang Y. Infodemiological study on COVID-19 epidemic and COVID-19 infodemic; 2020.
  21. Tuccori M, Convertino I, Ferraro S, Cappello E, Valdiserra G, Focosi D, et al. The impact of the COVID-19 "infodemic" on drug-utilization behaviors: implications for pharmacovigilance. *Drug Saf.* 2020 Aug;43(8):699-709. doi: 10.1007/s40264-020-00965-w, PMID 32572842.
  22. Yesuf M, Abdu M. Knowledge, attitude, prevention practice, and associated factors toward COVID-19 among preparatory school students in Southwest Ethiopia. Vol. 2021; 2022.
  23. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *Int J Biol Sci.* 2020;16(10):1745-52. doi: 10.7150/ijbs.45221, PMID 32226294.
  24. Alemu T, Amare S, Legesse S, Abera A, Ayalew M, Bezabih B. COVID-19 knowledge, attitude, practices and their associated factors among Dessie city residents, Northeast Ethiopia: A cross-sectional study. *Risk Manag Healthc Policy.* 2021;14:439-51. doi: 10.2147/RMHP.S287600, PMID 33574719.
  25. Akalu Y, Ayelign B, Molla MD. Knowledge, attitude and practice towards covid-19 among chronic disease patients at addis zemen hospital, Northwest Ethiopia. *Infect Drug Resist.* 2020;13:1949-60. doi: 10.2147/IDR.S258736, PMID 32612371.
  26. Asemahagn MA. Factors determining the knowledge and prevention practice of healthcare workers towards COVID-19 in Amhara region, Ethiopia: A cross-sectional survey. *Trop Med Health.* 2020;48(1):72. doi: 10.1186/s41182-020-00254-3, PMID 32839649.
  27. Gebretsadik D, Gebremichael S, Belete MA. Knowledge, attitude and practice toward COVID-19 pandemic among population visiting Dessie health center for COVID-19 screening, Northeast Ethiopia. *Infect Drug Resist.* 2021;14:905-15. doi: 10.2147/IDR.S297047, PMID 33716509.
  28. Cuan-Baltazar JY, Muñoz-Perez MJ, Robledo-Vega C, Pérez-Zepeda MF, Soto-Vega E. Misinformation of COVID-19 on the Internet: infodemiology study. *JMIR Public Health Surveill.* 2020;6(2):e18444. doi: 10.2196/18444, PMID 32250960.