

IMPACT OF AWARENESS ON COVID INFORMATION LITERACY (CO-IL) IN JAMMU DISTRICT OF JAMMU, AND KASHMIR

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ABSTRACT -

The study examined the factors affecting the Co-IL and the awareness regarding the misinformation during the infodemic in the Jammu District. Data was collected through a questionnaire comprising 30 statements related to COVID information, basic information, prevention, transmission, treatment, and vaccination, which measure awareness and self-analysis of the skills related to each type of information that measures Co-IL. Correlation and Wilcoxon sign test is used to study if COVID information literacy (Co-IL) predicts awareness regarding misinformation and its relationship with various demographic factors. The results demonstrate the factors affecting the awareness include demographic characteristics, but at most are influenced by their Co-IL. Co-IL predicts the awareness regarding the misinformation, led to the infodemic. The study demonstrates that there is a need to bridge the gap between awareness and information literacy among the public to meet the long-lasting negative impact of misinformation even after the pandemic.

Keywords: COVID-19, Misinformation, Information literacy, Infodemics, Health Information literacy, etc.

INTRODUCTION

The outbreak of COVID-19 develops fear, uncertainty, and the utmost need for authentic/ credible information. To satisfy the information needs related to the pandemic, people consulted various sources of information like television, newspapers, government and non-government agencies, social media, etc. The huge amount of information generated on different platforms intensified the situation (Escoda, Esteban, Romero & Narros, 2021) and led to Infodemics including false and misleading information during the pandemic (WHO, n.d.). Infodemic led to the spread of disinformation, misinformation, and mal-information (UNESCO, 2020) and causes anxiety, confusion, and mistrust (WHO, n.d.) in society.

With the escalation of information outbreaks, Infodemics diffuse and fill the information gaps with misinformation, disinformation, and mal-information (WHO, n.d.) and prove to be fatal (Dakhode, Chaware, Muntode, Ingole & Joshi, 2021). The outbreak was at its peak during the COVID-19 pandemic and claimed more than 700 lives in Iran, which believed a piece of fake information that methanol can cure COVID-19 (Konar & Kabli, 2021).

REVIEW OF LETERATURE

Individuals seek and share information to withstand and respond to and social media is widely used and provides freedom to communicate (Tran et al., 2021), socialization, information sharing, and entertainment, etc. specifically, and results in a flow of accurate and inaccurate information (Infodemics) (Escoda et al., 2021). Consequently, problems in finding reliable sources, and using inaccurate information result in difficulty in managing health (Shehata, 2021). There is a need for change in information-seeking behavior to tackle misinformation (Aminu, 2020) due to an overload of unreliable and fake information (Skarpa & Garoufallou, 2021). At this stage, media, especially social media can play a significant role by enhancing awareness and communicating health information (Banerjee & Rao, 2022). International Fact-Checkers Network reported about 6000 fake news circulated among the public (Escoda et al., 2021) and indicate that the users cannot identify fake news because misinformation circulated through leading and reliable media houses, and led to a false sense of security, and distrust, and ignoring of valuable government recommendations (Tran et al., 2021). It was a major problem and subsequently increases cases,

fatalities, and anxiety (Aminu, 2020). The digital marketing of misinformation has harmful effects on the public at large (Kabha, et al., 2020) and misleads the individual as well as the community (Tran et al., 2021). In addition, spending more time on COVID information proves deadly and raises anxiety, fear, and depression (Banerjee & Rao, 2022). Based on the literature a theoretical framework presents factors that directly or indirectly affect the state of infodemics in society and is discussed as under:

Information Sources

Studies reported that an individual's characteristics affect the variety of sources consulted for seeking information regarding COVID-19. Young people were more enthusiastic (Le et al., 2020), and preferred social media (Datta et al., 2020), whereas, older people considered television, electronic press, and news websites as reliable sources (Skarpa & Garoufallou 2021). The nature of resources accessed also depends on gender and place of residence (Olaimat, Aolymat, Shahbaz & Holley, 2020). In similar studies, it was found that students preferred the internet, social media, and mass media (Olaimat et al., 2020), government websites and scientific journals were preferred formal sources of information whereas online and social media are referred to as informal sources of information. Further, it was critical to find that 75% of respondents in a study reported receiving inaccurate information and experienced difficulty in differentiating the fake and real information (Datta et al., 2020).

Awareness and Skills for COVID Information

The males (gender), older (age), married (marital status), and individuals with high income and

higher education (Okunlola, Lamptey, Senkyrie, Dorcas & Dooshima, 2020; Olaimat et al., 2020; Tariq, Tariq, Baig & Saeed, 2020; Alhusseini et al., 2021; Kardalkar & Sherkhane, 2021; Sulistyawati et al., 2021,) possess good knowledge regarding COVID-19. On the contrary, Kardalkar and Sherkhane (2021) and Sulistyawati et al. (2021) found younger generation was more aware. Meanwhile, the area of education was also reported as a significant factor in gaining COVID knowledge as students of the medical science stream had good knowledge as compared to others (Olaimat et al., 2020). However, a few studies have associated individuals from the health sector can possess inadequate health information literacy (Rathnayake & Senevirathna, 2019) nevertheless more informed about COVID-19 (Okunlola et al., 2020). Regardless of this, studies also reported that females, healthcare workers, and individuals with higher qualifications and income had more knowledge of COVID-19 (Alhusseini et al., 2021). The individuals having urban backgrounds and high

levels of health literacy were reported to be aware regardless of their, age, gender, university, and the program they enrolled in. (Naveed & Shaukat, 2022).

Misinformation

The literature depicts huge variability in COVID-19 information and indicates the nexus of information in Infodemics. These include myths and facts regarding COVID-19 reported by various organizations and researchers. People had average knowledge of COVID-19, and need to get aware of the pandemic (Kardalkar & Sherkhane, 2021) as they believed in misinformation, and get confused about identifying them (Konar & Kabli, 2021). Insight factors affecting knowledge of COVID information and vaccine safety were employment status and the occupation of respondents (Okunlola et al., 2020), education level (Tahir, et al., 2021), income level and area of residence (Kricorian, Civen & Equils, 2022). Table 1 outlines the information which creates a nexus of mis/dis information.

Table 1: Mis/ information Concerning COVID-19

Statements related to Mis/ information Concerning COVID-19		Literature studied
General statements	<p>S-1. It spreads through the virus</p> <p>S-2. People can recover from COVID-19.</p> <p>S-3. One can test negative and later test positive for COVID-19.</p> <p>S-4. The best way to detect COVID-19 is by laboratory tests.</p> <p>S-5. Holding a breath for 10 seconds or more without any discomfort means a person is free from COVID-19.</p>	<p>Reddy et al. (2020); New Jersey Department of Health(2020); WHO (2020);WHO(2021); Konar & Kabli (2021); Dakhode et al. (2021);</p>

Transmission	<p>S-6. Mosquito bites and houseflies can transmit it.</p> <p>S-7. It transfers from a mother to a child through breastfeeding</p> <p>S-8. It spread through 5G mobile networks.</p> <p>S-9. Older people are more susceptible than the younger generation.</p> <p>S-10. The weather affects its transmission</p> <p>S-11. People with co-morbidity are at high risk.</p>	<p>Reddy et al. (2020); WHO(2020); Okunlola et al. (2020); Konar & Kabli (2021); Dakhode et al. (2021); WHO(2021);</p>
Treatment	<p>S-12. Garlic and ginger can prevent it</p> <p>S-13. Antibiotics are effective in treating it</p> <p>S-14. Vitamins and mineral supplements can cure it.</p> <p>S-15. herbal tea and herbal supplements cure Covid 19.</p>	<p>Reddy et al. (2020); Okunlola et al. (2020); WHO(2020).</p>
Prevention	<p>S-16. Exposing Sun can help prevent it</p> <p>S-17. Cleaning hands frequently with soap can prevent it</p> <p>S-18. Using hand dryers can prevent it.</p> <p>S-19. Vaccines against pneumonia do not protect against it</p> <p>S-20. Proper sanitation and hygiene are enough to prevent it.</p> <p>S-21. Ultra-violet lamps can disinfect hands and other areas of the skin.</p> <p>S-22. Hand sanitizers can prevent it.</p>	<p>Reddy et al. (2020); Okunlola et al. (2020); WHO(2021); Dakhode et al. (2021); Kardalkar & Sherkhane (2021)</p>
Vaccination	<p>S-23. The Covid-19 vaccine is harmful.</p> <p>S-24. Its vaccines cause infertility.</p> <p>S-25. COVID-19 vaccines alter DNA</p> <p>S-26. COVID-19 vaccines enhance global rise in cancer</p> <p>S-27. COVID-19 vaccines are not safe.</p> <p>S-28. Precautions are not required after vaccination.</p> <p>S-29. A person can be infected through COVID-19 vaccines</p> <p>S-30. The effectiveness of the vaccines is affected the food consumed.</p>	<p>WHO(2021); Kanzoia & Arya (2021); Centers for Disease Control and Prevention (2021); WHO(2022); Kricorian et al. (2022); Reuters (2022); CDCP(2022)</p>

The state of the Infodemics was witnessed at both the individual and community level, and misinformation led to the COVID narrative as an attenuated belief and hindered the understanding of the COVID conspiracy theory result in

functional and adverse real-life outcomes(Agley & Xiao, 2021). During the pandemic, individuals from varied demography had different health information needs (related to COVID) at five levels i.e., basic information, transmission,

treatment, preventive measures, and vaccination. Those who possess health information literacy skills can evaluate the authenticity and reliability of information sources and would access and share only authentic and reliable information which would lead to the flow of valuable information (at the community level) in society. Whereas, in case of failure in the evaluation of information, misinformation would spread in the community. Both reliable and fake news or misinformation are assorted and shared in no time and raises the state of "Infodemics" i.e., accurate information and inaccurate information (information overload).

Agarwal and Alsaedi (2020) suggested a framework for information behavior on fake news and ways to fight where diffusion of misinformation/disinformation/ fake news is suggested to be dealt with by skills like information literacy, critical thinking, and critical action. A direct impact of health literacy on the poor quality of healthcare services and risks to patient safety and for this an individual must possess health information skills for accessing, evaluating, understanding, using, communicating, and attaining knowledge related to health. Further, the health information divide in the Jammu Division due to, a lack of knowledge regarding information sources, and language barriers citizens met challenges while seeking health information. Furthermore, demography created a digital divide and required the utmost need for guidance regarding good health information sources (Thakur, 2016 and 2019). Henceforth, a lack of information literacy skills led to failure in the identification of accurate and authentic information, indicating how information during Infodemics, creates a state of confusion

and panic in society. The present study is an attempt to study this nexus of information and its knowledge and to know about the prevailing situation of the Infodemic in the Jammu District. Discerning the previous studies, the theoretical framework is designed which aimed to understand the construct of information flow and knowledge development through current aspects of Infodemics (Fig 1).

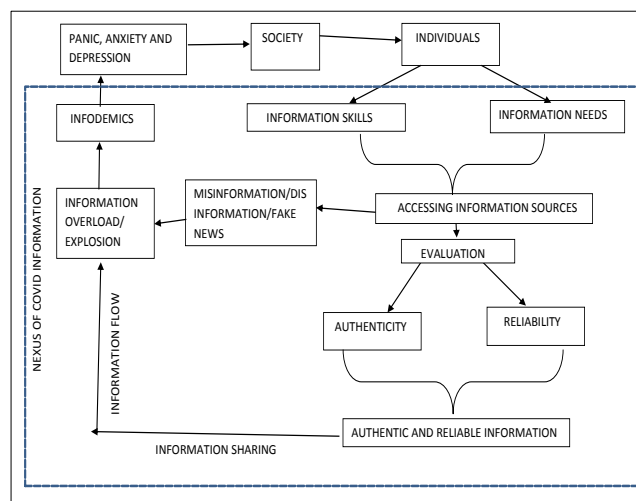


Fig. 1: Nexus of Infodemic (Theoretical Framework of COVID Information)

OBJECTIVES OF THE STUDY

1. To study the awareness level regarding the authenticity of COVID-19 information.
2. To study the COVID information literacy (Co-IL level) of the respondents,
3. To study the impact of awareness of COVID-19 on Co-IL of the respondents and To find the factors affecting Co-IL and awareness level of COVID-19

METHODOLOGY

The data was collected from a sample of 194 respondents from the Jammu District through a

survey in January 2022 to identify Co-IL, accessibility to various sources for COVID information, and awareness of COVID-19. The awareness was examined by asking about the authenticity of statements related to the basic information, treatment, transmission, prevention, and vaccination and whether they can identify, access, evaluate, and use COVID information; and knew the information in each paradigm.

The awareness of respondents was tested by using thirty statements belonging to five paradigms i.e., basic information about COVID, prevention, transmission, treatment, and vaccination (Table1). The respondents were asked to assess the authenticity of every statement. For each correct response, the respondent scored 1, and 0 for incorrect. One can achieve the lowest score of zero and the highest of 30. The respondents who scored below 18 were ‘poor’, 19-22 as ‘average’, and 23 or above as ‘excellent’ in COVID-19 awareness. The respondents were also asked to self-assess their abilities to identify, access, evaluate, use, and knowledge of COVID information. Based on self-assessment 0- was marked for inability and 1- for ability and one can achieve the lowest score of zero and the highest of 25. The respondents who scored below 11 were marked as ‘poor’, 12-14 marked as ‘good’, 15-18 marked as very good, and 19 or above as ‘excellent’ in COVID-19 information literacy (Co-IL). The reliability of COVID-19 awareness with 30 items was tested and interpreted on the rule of George and Mallery (2003) and Cronbach's alpha for the total scale which is good i.e., .79, and 25 items depicting Co-IL is good i.e., .86.

RESULTS

Respondents' profile

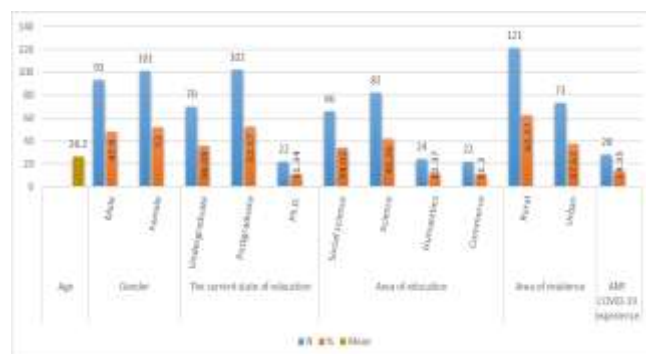


Fig. 2 Respondents' profile

Out of 194 respondents, the majority were females, with a mean age of 26.2 years and an income of Rs 21242.27. Most of the respondents were from rural areas and were postgraduate, followed by undergraduate and Ph.D. The majority of the respondents were from the science stream, and have some personal experience with COVID-19.

5.2 Information Sources for COVID-19 Informat

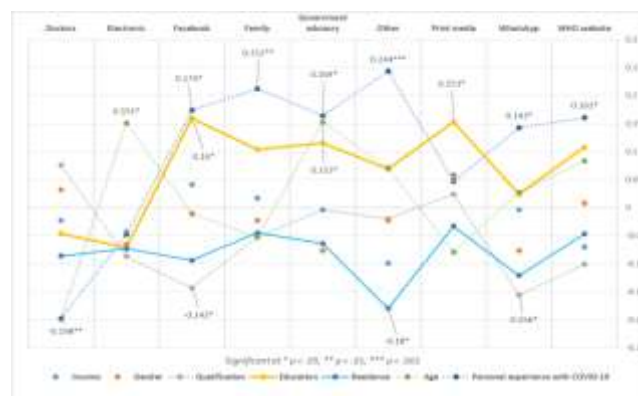


Fig. 3: Scatter plot of Information Sources for COVID-19 information

The respondents consult information sources like family, electronic media, doctors, government guidelines, WHO guidelines, Facebook, and WhatsApp. Fig. 3, illustrates the relationship between the referred information sources and respondents' previous experiences with COVID-19. The results indicate a relationship between the age of the respondents and preferred information sources, i.e. electronic media ($r=0.151$), doctors ($r=-0.198$), and government advisories ($r=0.153$) for information. The lower qualified respondents significantly preferred Facebook ($r=-0.143$) and WhatsApp ($r=-0.156$), and the income and gender of respondents do not have any relationship with their usage of information sources.

5.3 Objective 1: To study the awareness regarding the authenticity of COVID-19 misinformation

It summarises that a few of the respondents correctly identified the misinformation stated in S5 and S3. A majority of respondents correctly identified the facts related to the transmission of COVID-19. The majority of the respondents correctly identified the misinformation related to the treatment of COVID-19. The knowledge regarding the prevention of COVID was assessed and found that 75.3% of respondents correctly identified the misinformation stated in S20. However, a majority of the participants were not able to correctly identify the misinformation regarding vaccination. Based on the scoring done to assess the awareness of COVID-19 information, a handful of respondents had a good awareness of COVID-19 information.

5.4. Objective 2: To study the Co-IL of the respondents

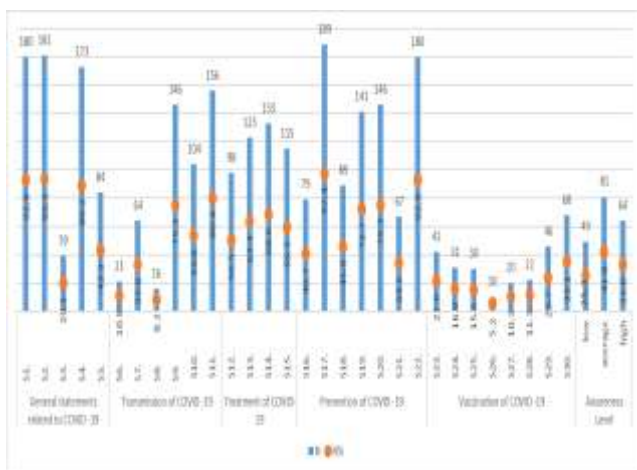
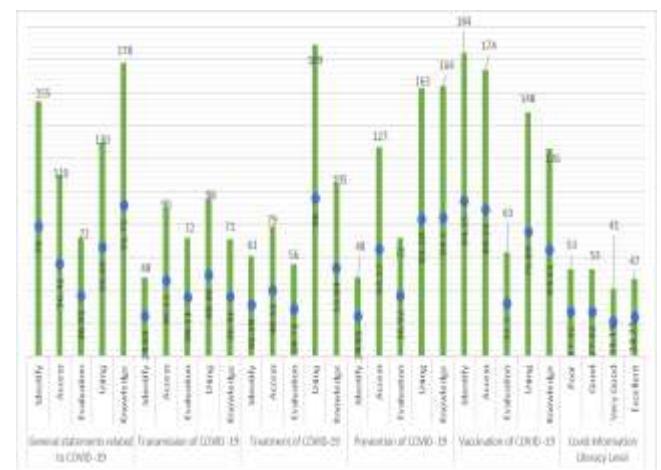


Fig.4. Awareness Regarding the Authenticity of COVID-19 Information

COVID-19 awareness was studied in five aspects i.e., general statements, transmissions, treatment, prevention, and vaccination. Fig. 4.illustrates the awareness of the respondents regarding the information related to COVID-19 and popular in Indian society specifically in the Jammu District.



Only a handful of respondents had the skills to evaluate the general statements, a few had the skills to identify, access, evaluate, and use the information and knowledge of the transmission of COVID-19. Further, respondents had the skills to identify (31.28%), access (40.51%), and evaluate (28.71%) the information related to the transmission of COVID-19. A small number of

respondents had the skills to identify and evaluate the information regarding prevention and vaccination. Based on the scoring done to assess the Co-IL, it was found that 27.32% had low Co-

IL, 27.32% had good, 21.13% had very good and at least 24.23% had excellent Co-IL

Objective 3: To Study the Impact of Awareness of COVID-19 and Co-IL.

Table2. Impact of Awareness of COVID-19 and Co-IL

MEASURES	Paired Samples T-Test / Wilcoxon signed-rank test.				95% CI for Rank-Biserial Correlation		
	Measure 1	Measure 2	W	p	rB	Lower	Upper
	Awareness	Co-IL	882	< .001	-0.651	-0.763	-0.501
Minimum Score	7	4					
Maximum Score	29	23					
Mean Score	20.87 ± 4.5	14.33± 4.4					

Table 2 illustrates the level of COVID-19 awareness and COVID-19 information literacy (Co-IL) among the respondents. the respondents scored a minimum of 7, a maximum of 29, and a mean score of 20.87±4.5 which depicts the average level of awareness among respondents,

and the respondents scored a minimum of 4, a maximum of 23, and a mean score of 14.33±4.4 which depicts the good level of Co-IL of respondents. Wilcoxon’s signed-rank test shows a highly significant, W=882, p<0.001. The rank-biserial correlation is considered as effect size and interpreted that rB= 0.651 is large.

5.6. Objective 4: To study the factors affecting the COVID -19 awareness regarding misinformation

Table 3: Factors Affecting the COVID-19 Information Literacy

Information literacy skills	Paradigm	Age	Income	Gender	Qualification	Education	Residence	Experience with COVID
Identify	Basic	0.011	-0.315**	0.085	-0.099	-0.188**	0.018	-0.148*
	Transmission	0.247**	-0.128	-0.119	0.102	0.012	-0.125	0.057
	Treatment	0.096	-0.045	-0.172*	0.072	-0.13	-0.114	0.054
	Prevention	0.047	-0.097	0.144*	0.19**	0.037	0.048	0.003

	Vaccination	0.00 1	0.011	0.056	0.099	0.195	0.133	0.027
	Identify	0.189**	- 0.209*	-0.031	0.121	-0.018	-0.009	-0.024
Access	Basic	0.06 6	- 0.196*	0.036	0.171*	-0.115	-0.03	-0.008
	Transmission	0.14 6*	0.054	-0.1	8.2	0.091	0.003	0.041
	Treatment	- 0.11 6	- 0.193*	0.041	-0.072	0.012	0.072	0.072
	Prevention	0.10 5	-0.121	-0.087	-0.008	0.089	-0.059	0.053
	Vaccination	0.06 7	0.05	-0.088	-0.063	0.033	0.088	-0.003
	Access	0.096	-0.141	-0.053	0.049	0.021	0.021	0.051
Evaluation	Basic	0.18 5**	-0.157*	-0.117	0.003	-0.113	-0.068	0.114
	Transmission	0.18 5**	-0.157*	-0.117	0.003	-0.113	-0.068	0.114
	Treatment	- 0.06 1	0.207*	0.133	0.158*	-0.01	-0.072	0.018
	Prevention	0.18 5**	-0.157*	-0.117	0.003	-0.113	-0.068	0.114
	Vaccination	0.10 9	0.017	-0.128	0.047	-0.078	-0.13	-0.043
	Evaluation	0.197**	-0.062	-0.116	0.078	-0.13	-0.149*	0.101
Using	Basic	0.16 5*	-0.165*	-0.147*	-0.058	-0.061	0.024	-0.041
	Transmission	0.07 8	-0.091	-0.103	0.056	0.102	-0.066	0.082
	Treatment	0.03	0.025	-0.026	0.201**	0.198**	0.126	-0.008
	Prevention	0.17 6*	0.267**	-0.024	-0.061	0.028	0.077	-0.073
	Vaccination	0.12 7	-0.015	0.072	-0.075	0.229	0.033	-0.089
	Using	0.219**	- 0.188*	-0.085	-0.013	0.082	0.014	-0.028

Figure 6 is an extended illustration of the Infodemic, stated in Figure 1, based on the results of this study. Individual's demography such as age, gender, income, education, and area of residence found to have a significant impact on the use of information sources/ social media and their evaluation (dotted blue arrows). Social media are the major medium for spreading fake news and producing panic in society (Escoda et al., 2021; Skarpa & Garoufallou, 2021) and despite the respondents who have consulted authoritative sources of information viz. WHO and Government guidelines, had average awareness. The use of social media makes society vulnerable to mis/disinformation and people even those belonging to the science field and higher qualifications failed to identify and share it and met information explosion and Infodemics. Consequently, infodemics prevail and are influenced by individuals' demography, Co-IL, and any experience with COVID-19. The average awareness and Co-IL designate the inability to identify the authenticity of the information or its sources. Infodemics make it difficult to identify fake news. Hence, knowledge is essential to put an end to the pandemic and fight the aftermath. This study provides an idea about the knowledge and usage of resources related to the pandemic and the possible factors affecting them. Hence, every piece of information should be verified on the *Mythbusters* would reduce Infodemics. Using various fact-checking websites that verify the authenticity of information during the pandemic such as https://www.bbc.com/news/reality_check, <https://twitter.com/factchecknet>, etc.

The Government of India should provide tailored healthcare information, where trusted sources can be utilized for wide-spreading authentic

information in society and strictly monitoring the social media networks by the electronic media regulatory authority (Akhtar, Nawaz, Idnan & Hayee, 2021). Health information literacy programs by libraries can create awareness to encourage a positive attitude and safe practices (Kardalkar & Sherkhane, 2021), enhancing transparency and spreading accurate information would combat fears and doubts (Kanozia & Arya, 2021) and eliminate the misinformation related to COVID-19 in society. Enhancing information literacy skills would enable society to identify authentic and reliable sources of information and enable individuals to identify health-related myths to improve the quality of individuals' life.

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