



# Essential Service Products as Channels for COVID-19 Awareness and Behavior Change: A Narrative Review

Vineet Kumar Pathak<sup>1</sup> Karpaga Priya P.<sup>1</sup> Sunil Kumar Panigrahi<sup>1</sup> Utsav Raj<sup>1</sup> Mohan Kumar<sup>2</sup>

<sup>1</sup>Department of Community and Family Medicine, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India

<sup>2</sup>Department of Community Medicine, KMCH Institute of Health Sciences and Research, Coimbatore, Tamil Nadu, India

**Address for correspondence** Mohan Kumar, MD, KMCH Institute of Health Sciences and Research, Coimbatore, Tamil Nadu 641014, India (e-mail: kumar.mohan324@gmail.com).

Ann Natl Acad Med Sci (India) 2023;59:77–82.

## Abstract

Coronavirus disease 2019 (COVID-19) is here to stay. Nonpharmacological interventions such as hand hygiene, social distancing, and respiratory hygiene have remained the mainstay to curb the spread of the virus, and these are sustainable. To understand the information, education, and communication (IEC) efforts undertaken during previous pandemics and successful behavior change strategies that may be applicable to ongoing COVID-19 pandemic, we conducted a narrative review of articles using PubMed search on September 11, 2022. The results highlighted that reinforced IEC is the need of the hour in efforts against COVID-19 pandemic. The communication strategy during a pandemic should be of three stages aligned to the objectives of building a basic understanding and knowledge in the target population: building an awareness of the threat; personal actions to minimize the impact; and reinforcing the need for appropriate actions to minimize disease transmission, in that order. An innovative strategy of displaying IEC on the daily essential products can result in a sustainable solution that might result in a “felt need” in the community to follow COVID-19 appropriate behavior. A broad base of stakeholders’ engagement with civil bodies, nongovernmental organizations, private sectors with well-defined responsibilities and accountability would offer an enabling environment for these efforts in ultimately curbing the COVID-19 pandemic.

## Keywords

- ▶ COVID-19
- ▶ essential service products
- ▶ behavior change
- ▶ narrative review

## Introduction

The global pandemic of severe acute respiratory syndrome (SARS) coronavirus 2 (CoV-2) causing novel coronavirus disease 2019 (COVID-19) began in late 2019 affecting more than 214 countries around the world. There were 486 million cases reported globally with more than 6 million deaths

reported as of April 1, 2022.<sup>1</sup> India had its first case on January 30, 2020, in Kerala<sup>2</sup> following which the governments initiated information, education, and communication (IEC) activities as a part of the broader infection prevention and control strategy. This included thermal screening at points of entry, isolation at airports, and bans on international flights.<sup>3,4</sup> Nonpharmacological interventions

article published online  
June 16, 2023

DOI <https://doi.org/10.1055/s-0043-1768137>.  
ISSN 0379-038X.

© 2023. National Academy of Medical Sciences (India). All rights reserved.

This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

endorsed in IEC activities were social distancing (minimum 1 m distance between two persons), staying indoors by avoiding unnecessary travel, frequent handwashing with soap and water or use of alcohol-based hand rubs, and cough etiquettes. There was a nationwide lockdown starting March 24, 2020, which was eventually followed by many countries across the globe.<sup>5</sup>

As appropriate treatment modalities are yet to be discovered and vaccination is providing varied levels of protection because of continuous mutation in the virus (delta, delta plus, omicron),<sup>6</sup> nonpharmacological interventions have remained the mainstay to curb the spread of the virus. In a study reported from China, it was predicted that without nonpharmacological interventions, the number of cases would have been 67-fold higher (interquartile range 44- to 94-fold).<sup>7</sup> In a case study reported from New York City, universal masking was associated with an approximately 7% transmission reduction overall and up to 20% reduction for 65+ years old.<sup>8</sup> Similar measures undertaken by national governments during the complete lockdown period were the suspension of all modes of transport, strict closure of all types of shops, malls, restaurants, saloons, gymnasium and swimming pools, schools, colleges, religious places, ban on religious gatherings, postponement of examinations, interviews, and other meetings involving public gatherings; and work from home policy was implemented by many national and international companies. Educational, official classes/meetings, respectively, were conducted online to support the government guidelines.<sup>9</sup> The use of homemade masks had been mandated for the general public coming outdoors along with hand and respiratory hygiene. The government of India has been engaged in IEC activities through print media, television, caller tunes, banners, posters, and public interviews by national leaders/health professionals with an emphasis on simple interventions such as hand hygiene, social distancing, and respiratory hygiene. Recently, these include efforts to overcome vaccine hesitancy. According to the World Health Organization, communication expertise is as critical as epidemiological and laboratory expertise for the control of an outbreak.<sup>10</sup>

COVID-19 is expected to be with us for a long time and there is no time for complacency.<sup>11</sup> To recover from economic loss in lockdown, India had started reopening the country in a phased manner from June 1, 2020, and is now with zero COVID-19 restrictions. The country has also started international travel effective from March 27, 2022. It is essential to remember that India is still reporting more than 1,500 cases per day amid increasing number of countries reporting fourth spike in COVID-19 cases, reportedly fourth wave.<sup>12,13</sup> It is the need of the hour to develop sustainable interventions that are preferably nonpharmacological to curb to the emerge and spread of COVID-19. The aim of this review was to describe the IEC efforts undertaken during previous pandemics, and successful behavior change strategies that may be applicable to ongoing COVID-19 pandemic.

## Methods

A narrative review of articles elaborating on IEC efforts, behavior change strategies in pandemic situations was conducted without restrictions on the type of study. A search was done on PubMed using the keywords that include but not limited to “Information Education and Communication,” “behaviour change,” pandemic on September 11, 2022. There were no language restrictions. This resulted in 770 articles. After reviewing the titles and abstracts, 285 articles were identified. Finally, 15 studies that were relevant to the objective of this study were identified through full-text screening. The search was not exhaustive, limited to PubMed and the results were narratively summarized. Two review authors (M.K. and K.P.P.) independently screened the titles, abstracts, and full texts; and extracted data. Any disagreements were resolved by discussion or referring to other review authors (V.K.P., S.K.P., and U.R.).

## Review

### Learnings from Our History

During the great epidemic of the plague in India in 1994, fax service, voice information service, telephone hotlines, and print media were used to disseminate educative materials. During the SARS pandemic of 2003, the travel advisories and other guidelines were primarily circulated through electronic media.<sup>14</sup> During influenza (H1N1) pandemic of 2009, government websites, television, radio, and internet were the major modes of communication.<sup>15</sup> During avian influenza (H5N1) in Thailand, it was an effective communication strategy that brought about behavior change and not just the knowledge about the disease. As behavior change is a complex dynamic process involving both motivators and barriers,<sup>16</sup> it was learnt that increased awareness of the treat of avian influenza was possible due to recent (timing) and regular (frequent) information.<sup>17</sup> This highlights the need to reinforce the general public over and over again to perceive the threat and ultimately change their behavior to prevent the acquisition and spread of COVID-19. South Korea was able to flatten the curve through effective communication, sending infection prevention and control messages to their citizens every day as a text message alert. This was a stand-out effort by the government as compared with other European countries.<sup>18</sup>

### Behavior Change

The purpose of any communication will be to affect behavior change in the target population which in turn depends on the content delivered, channels of communication, factors related to the target population, and existence of feedback mechanisms.<sup>19</sup> Based on the conceptual framework using motivation, opportunity, and ability of the population for management of public health and social behavior, times like COVID-19 provide motivation but lack opportunity, provided ability is considered present. The target population is unable to behave in such situations and requires marketing

strategies to address the same.<sup>20,21</sup> Social marketing is an innovative platform to bring about desired behavior change. As one has to manage his/her life with SARS-CoV-2, the expected behavior change has to be long term at individual, group, or organizational and societal levels. This involves lifestyle changes, organizational changes, and sociocultural changes, respectively.<sup>22,23</sup> The bottom line of any social marketing activity is desired behavior change and in this pandemic situation, it will be the practice of social distancing, frequent hand washing, and cough etiquettes. These are simple acts but should be practiced continuously or frequently.<sup>24</sup>

### Need for Reinforcement

Skinner (1938) defined a reinforcer as an experience that raises the frequency of responses associated with it. Reinforcement has its maximum effect when it occurs at the same time as, or just after, the response. Reinforcement not only changes the frequency of the response but also strengthens the association between stimulus and response. Such reinforcements also help in shaping the process (faster when it is continuous) whereby behavior is gradually shifted from one form to another.<sup>25</sup>

### Evidence for Reinforcing IEC

In a study by Brewer et al, it was found that smokers whose packs had pictorial warnings attempted to quit more as compared with those whose packs had text-only warnings during the 4-week trial.<sup>26</sup> Having quit smoking for at least 7 days prior to the end of the trial was more common among smokers who received pictorial than those who received text-only warnings. Pictorial warnings also increased forgoing a cigarette, intentions to quit smoking, negative emotional reactions, thinking about the harms of smoking, and conversations about quitting.<sup>26,27</sup> In a meta-analysis conducted by Noar et al,<sup>28</sup> pictorial warnings were more persuasive than text-only warnings because pictures were attractive and held attention better; garnered stronger cognitive and emotional reactions; elicited more negative pack attitudes and negative smoking attitudes; therefore, more effectively increased intentions to not start smoking and to quit smoking.

### Discussion

The review of literature highlighted that reinforced IEC is the need of the hour in efforts against COVID-19 pandemic as:

1. The COVID-19 pandemic necessitates not “only fighting against the epidemic but also the simultaneous infodemic.”<sup>29</sup> The spread of misinformation and myths about a disease little known before, in this era of social media, has been unprecedented. To counter this, United Nations organization is already working with search and media companies (Facebook, Google, Pinterest, Twitter, TikTok, YouTube, etc.). The counteraction has mostly been limited to social media, television media, and print media by governments across the world. But these social media

along with the television media are also the source of misinformation. The effect of awareness generation in these media is essentially decided by the competitive interest generation and reach by individual IEC material (video/message/pictorial presentation, etc.) as compared with misinformation material available on the same platform.

2. The reinforced IEC through the packaging of essential products can serve as a vital uncompetitive media for delivering awareness messages and can effectively supplement the awareness generation and behavior maintenance of the population during pandemic.
3. The reinforced IEC through the packaging of essential products will broaden the reach of awareness to a wider population because of its doorstep delivery in households. This is important in view of the greater tricking down effect of misinformation and myths among nonsocial media users because of the element of interest and conspiracy attached to it.
4. The reinforced IEC will also help in mitigating the interruption of culture-sensitive communication strategies, for example, community-specific street plays, folk songs, etc. which can be represented pictorially or as poems over the packaging of essential products.
5. These kinds of IEC strategies can help in improving the mental health of the population by dissociating the source of awareness from the source of stressors (e.g., dreadful news of increasing corona deaths on TV, conspiracy regarding virus spread on social media).
6. Awareness generation during the pandemic cannot rely upon the community group awareness strategies because of the social isolation and physical distancing measures advised for curbing the spread of the disease. In these circumstances, individual awareness can reach each household along with the essential products.

### A Novel Strategy to Reinforce the Message

The communication strategy during a pandemic should be of three stages aligned to the objectives of building a basic understanding and knowledge in the target population: building an awareness of the threat; personal actions to minimize the impact; and reinforcing the need for appropriate actions to minimize disease transmission, in that order.<sup>15</sup> Accordingly, knowledge about the disease, its symptoms, and preventive measures have to be reiterated to the people time and again, in order to make sure that the interventions, brings about the desired behavior change in them. The information either texts or pictorial representations will be the augmented product, the intended behavior change will be the actual product and protecting themselves from disease acquisition and disease transmission will be the core product. These messages can be delivered with no special costs, making use of regular day-to-day products people purchase or consume. This also saves costs associated with promotional activities. This may necessitate appropriate environmental modifications and policies in addition to delivering health information.

Small messages can be printed out on the daily products which reach the population, underpinning the message newspapers have already started issuing educative materials related to COVID-19 every day. This can further be extended to other printable product covers such as milk packet covers, groceries cover, on cardboard boxes sent out for delivery of products by online delivering companies (→Figs 1–5). Even the food delivery boxes and covers can contain such informative messages. Printing the essential actions to be followed while boarding public transport, the tickets and boarding passes should contain a reminder message. Private companies can invest in this printing material as a part of corporate social responsibility (CSR) during crisis times.



Fig. 1 COVID-19-related health messages on a water bottle.

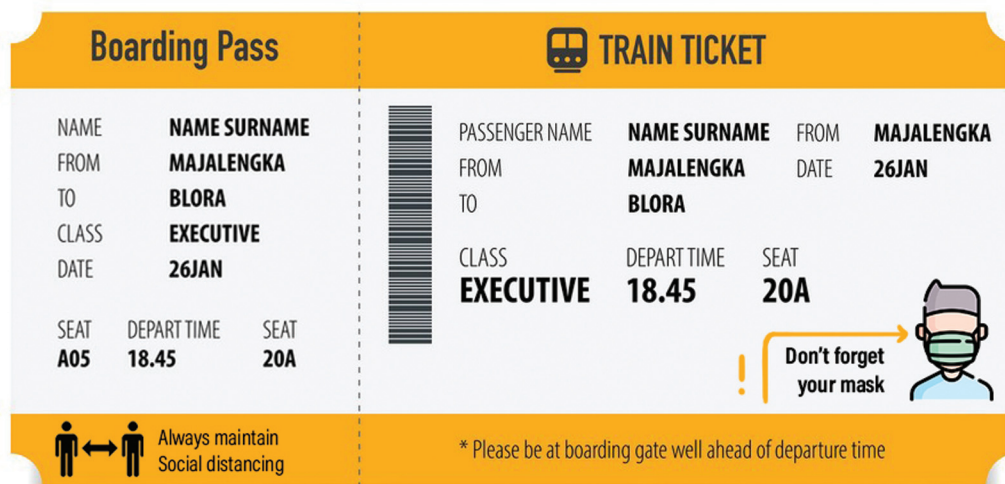


Fig. 2 COVID-19-related health messages on train tickets.



Fig. 3 COVID-19-related health messages on a cloth bag.



**Fig. 4** COVID-19-related health messages on a milk packet.



**Fig. 5** COVID-19-related health messages on cardboard boxes.

## Conclusion

The general public by now has a basic level of understanding and knowledge about the threats and risks of SARS CoV-2. It is time to reinforce the need for appropriate actions to be followed continuously to prevent the spread of infection. Government should bring a policy on the grounds of CSR that all the manufacturers will incorporate IEC short messages on the covers of their products for at least the next few months. All forms of media should be actively involved in the dissemination of informative up-to-date guidelines and regulations on COVID-19. It is high time that the desired behavior change brought about in the community would be the most affordable measure to combat the spread of infection and prevent loss of human, material, economic resources, and lives. A broad base of stakeholders' engagement with civil bodies, nongovernmental organizations, private sector with well-defined responsibilities, and accountability would offer an enabling environment and make the governments' proactive efforts meet the desired end.

**Ethics Approval**  
Not applicable.

**Authors' Contribution**  
All the authors were involved in manuscript preparation.

## Funding

None.

## Conflict of Interest

None declared.

## Acknowledgment

The authors would like to acknowledge Mr. Premkumar K. (premtree@gmail.com) for preparation of IEC materials.

## References

- 1 WHO Coronavirus (COVID-19) Dashboard. Accessed March 28, 2023, at: <https://covid19.who.int/>
- 2 Andrews MA, Areekal B, Rajesh KR, et al. First confirmed case of COVID-19 infection in India: a case report. *Indian J Med Res* 2020; 151(05):490–492
- 3 India's response to COVID outbreak. Accessed March 28, 2023, at: <https://pib.gov.in/PressReleasePage.aspx?PRID=1608727>
- 4 GRID COVID-19 Study Group. Combating the COVID-19 pandemic in a resource-constrained setting: insights from initial response in India. *BMJ Glob Health* 2020;5(11):e003416
- 5 PM calls for complete lockdown of entire nation for 21 days. Accessed March 28, 2023, at: <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1608009>
- 6 Garcia-Beltran WF, Lam EC, St Denis K, et al. Multiple SARS-CoV-2 variants escape neutralization by vaccine-induced humoral immunity. *Cell* 2021;184(09):2372–2383.e9
- 7 Lai S, Ruktanonchai NW, Zhou L, et al. Effect of non-pharmaceutical interventions to contain COVID-19 in China. *Nature* 2020; 585(7825):410–413
- 8 Yang W, Shaff J, Shaman J. Effectiveness of non-pharmaceutical interventions to contain COVID-19: a case study of the 2020 spring pandemic wave in New York City. *J R Soc Interface* 2021;18 (175):20200822
- 9 Zodpey S, Negandhi H, Dua A, Vasudevan A, Raja M. Our fight against the rapidly evolving COVID-19 pandemic: a review of India's actions and proposed way forward. *Indian J Community Med* 2020;45(02):117–124
- 10 WHO Outbreak communication guidelines. Accessed March 28, 2023, at: <https://www.who.int/publications/i/item/who-outbreak-communication-guidelines>
- 11 Murray CJL. COVID-19 will continue but the end of the pandemic is near. *Lancet* 2022;399(10323):417–419
- 12 COVID-19: Is India Really Doing 'Better' than Other Countries? Accessed March 28, 2023, at: <https://thewire.in/health/covid-19-india-data-performance>
- 13 Kanpur IIT SIR - COVID-19 Prediction Model. Accessed March 28, 2023, at: <https://covid19-forecast.org/>
- 14 Arguin PM, Navin AW, Steele SF, Weld LH, Kozarsky PE. Health communication during SARS. *Emerg Infect Dis* 2004;10(02): 377–380
- 15 Rogers WA, Street JM, Braunack-Mayer AJ, Hiller JEF. Views Team. Pandemic influenza communication: views from a deliberative forum. *Health Expect* 2009;12(03):331–342
- 16 Takeuchi MT. Avian influenza risk communication, Thailand. *Emerg Infect Dis* 2006;12(07):1172–1173
- 17 Barennes H, Harimanana AN, Lorvongseng S, Ongkhammy S, Chu C. Paradoxical risk perception and behaviours related to Avian Flu outbreak and education campaign, Laos. *BMC Infect Dis* 2010;10 (01):294
- 18 How governments are using text alerts to fight the coronavirus pandemic. Accessed March 28, 2023, at: <https://edition.cnn.com/2020/03/27/tech/text-alert-coronavirus/index.html>
- 19 WHO Strategic Communications Framework. Accessed March 28, 2023, at: <https://apps.who.int/dco/strategy/en/>

- 20 Rothschild ML. Carrots, sticks, and promises: a conceptual framework for the management of public health and social issue behaviors. *J Mark* 1999;63(04):24–37
- 21 McDonald CC, Kennedy E, Fleisher L, Zonfrillo MR. Situational use of child restraint systems and carpooling behaviors in parents and caregivers. *Int J Environ Res Public Health* 2018; 15(08):1788
- 22 National Research Council. *Enhancing Organizational Performance*. Washington DC, United States: National Academies Press; 1997:304
- 23 Serrat O. *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance*. Singapore: Springer Nature; 2017
- 24 Resnick EA, Siegel M. *Marketing Public Health: Strategies to Promote Social Change*. Massachusetts, United States: Jones & Bartlett Learning; 2013
- 25 Rachlin H. Skinner (1938) and Skinner (1945). *Behav Philos* 2018; 46:100–113
- 26 Brewer NT, Parada H Jr, Hall MG, Boynton MH, Noar SM, Ribisl KM. Understanding why pictorial cigarette pack warnings increase quit attempts. *Ann Behav Med* 2019;53(03):232–243
- 27 Brewer NT, Hall MG, Noar SM, et al. Effect of pictorial cigarette pack warnings on changes in smoking behavior: a randomized clinical trial. *JAMA Intern Med* 2016;176(07):905–912
- 28 Noar SM, Hall MG, Francis DB, Ribisl KM, Pepper JK, Brewer NT. Pictorial cigarette pack warnings: a meta-analysis of experimental studies. *Tob Control* 2016;25(03):341–354
- 29 UN tackles ‘infodemic’ of misinformation and cybercrime in COVID-19 crisis. Accessed March 28, 2023, at: <https://www.un.org/en/un-coronavirus-communications-team/un-tackling-%E2%80%98infodemic%E2%80%99-misinformation-and-cyber-crime-covid-19>