# The use of images in the promotion of health behaviors | Fact-sheets collection from the Portuguese COVID-19 pandemic Task Force on Behavioral Sciences

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## Abstract

The use of images is highly frequent in science and health communication, and it is usually considered to be very effective to transmit health messages. Although not so much attention has been paid to measuring the effects of using visual elements in public health communication, images can indeed contribute to increase effectiveness in promoting adherence to health behaviors. The choice between images that activated negative emotions, such as fear or threat, versus images that induce positive emotions, such as emotions resulting from social support, or rather emotional-neutral images, needs to be grounded in evidence about how emotional arousal may impact health-oriented decisions. This fact sheet was developed to provide easy-to-use scientific pieces of evidence about the use of images for health promotion to stakeholders involved in public health decision.

**Keywords:** Public health support, Evidence-based policies, Policy brief, Health communication.

## Introduction

The use of images (photos, videos, pictograms, or infographics) is common and almost consensually considered a powerful element in health communication initiatives (Barros et al., 2014; Houts et al., 2006). Research in this field has mainly focused on the understanding of how images improve attention, comprehension, memory, and, ultimately, how they may affect adherence to health behaviors (Houts et al., 2006).

Studies involving health-related warning-labels on tobacco packs have shown that the combination of narratives with visual elements increases attention. This assembly of images with narratives also contributes to the effective education of smokers about the risks associated with smoking behavior and was found to be associated with a positive effect on the motivation of those people who already have some intention (contemplative stage of change) to quit smoking (Fong et al., 2009).

Although little attention has been paid to the effect size of using visual elements in public health communication (Fung et al., 2020), there is evidence that images may enhance the effectiveness of campaigns aiming to promote adherence to health behaviors.

## Relevant pieces of knowledge for public health action

- The development of culturally and locally sensitive images and the inclusion of visual elements closely related to the target audience (i.e., in-group elements that people may recognize) contribute greatly to the effectiveness of the health message and, therefore, to the adherence to health behaviors that are being promoted by the images (Dowse & Ehlers, 2001; Ngoh & Shepherd, 1997; Roter et al., 1986).
- Including key short messages in call-for-action images, together with hyperlinks for complementary textual information about health, has been found as effective in promoting health behavior (Houts et al., 2006; Kim & Kim, 2020; Shi et al., 2016).
- Low-literate segments of the population benefit more from the use of images in health communication, thus increasing adherence to health behaviors (Houts et al., 2006; Ngoh & Shepherd, 1997; Schubbe et al., 2020).
- The quality (e.g, sharpness) of the image is a key determinant of adherence to the message that is being communicated (Pan et al., 2016).
- Closeup images of human faces do not raise much awareness and are associated with lower audience engagement. Images that include human elements without facial zoom (Kim & Kim, 2020) are more effective to raise attention to health messages.
- Images of people with facial expressions representing neutral emotions or happiness are negatively associated with behavioral adherence when the evoked emotion is incongruent (or dissonant) with the messages that are being communicated (Kim & Kim, 2020).

**Table 1. Emoji: a specific type of health-promoting image**

Created to simplify digital messages, emojis are non-verbal communication signs (and therefore less susceptible to the language barrier effect), providing an alternative to face-to-face communication and being able to act directly on the emotional state of the individual.

Emojis usefulness in preventing and controlling infections has been studied (Lotfinejad et al., 2020), especially for raising awareness of public health issues, promoting the adoption of health behaviors, or for monitoring reactions to infectious diseases, namely through the analysis of social networks (in messages using emojis).

- Emojis have been used in hospital settings to increase hand hygiene behavior through the activation of injunctive/prescriptive norms (i.e. that require approval from others) (Gaube et al., 2018).
- Narrative messages (Jarreau et al., 2021) and the use of emojis are useful in when the communication goal is to remind people of a health behavior that is already, normatively, accepted (Willoughby & Liu, 2018).
- The use of emojis in communication with young populations is effective for promoting adherence to health behaviors (Siegel et al., 2015).

- The use of visual stimuli delivered in point-of-decision places, as well as animated visual elements, are effective in the formation of habits, namely hand hygiene (Beyfus et al., 2016; Bobek & Tversky, 2016; Stella et al., 2019).
- The use of companion animals, particularly dogs and cats, has a powerful effect in capturing the audience's attention, which has been widely explored in the advertising and marketing area (Jia et al., 2022).

## Calls for action

- The best available scientific evidence recognizes the importance of the use of images in health communication, which impact not only on audience's attitudes but also activates behaviors. In this sense, the use of images should be a central element in the communication strategy of health authorities.
- The choice of images should be made by taking into consideration the communication's purpose, the profile of the target audience, and the channel through which the message will be communicated. Whenever possible, multiple images should be used, with variation in the characteristics of people included, thus illustrating the diversity of the audience and promoting an in-group identification with the people included in the images. Image banks, particularly the free ones, offer a portfolio that is culturally and ethnically unvaried and stereotyped. It is crucial that the images are resonant, and that there is recognition of similarity by the viewer. Therefore, it is recommended that the choice of images should consider the generational, cultural, ethnic, and religious diversity of the audience, as well as the diversity of personal characteristics (gender, height, age, physical condition, etc.). Whenever possible, representatives from these segments of the audience should be invited to collaborate in proposing, choosing, or even producing different types of images.
- The use of images should be adapted to the communication channels that are most used by the target communities. Social networks, for example, are mostly used by younger segments. In particular, Instagram has greater penetration in the 16- to 24-year-old age group.
- Images, especially pictograms, are effective tools for the communication of health messages, particularly when it comes to instructions, such as how to wear a mask correctly or how to wash hands correctly, namely for low-literate audiences.
- The key message should be embedded in the image itself. Access to complementary (more in-depth) information must be provided via hyperlinks or reference to other sources, provided in an iterative perspective: from the simplest to the most complex (and complete) level of information. This is not only important in social networks which, by their nature, limit the number of characters, but also in platforms that do not have this limitation (Facebook, for example); in Instagram, which is mainly dedicated to creating and sharing images (photos and videos) and stories, this issue assumes special relevance, also considering the profile of its users (predominantly from 16 to 24 years old).
- The use of moving images (short videos or animated images) is effective for health promotion and, therefore, recommended; depending on the characteristics of the audience segments, different types of images should be considered (e.g. comics for younger audiences). Narration reinforces the message.
- The use of images that express neutral emotions or images that suggest happiness are discouraged when these emotional tones are dissonant with the message that is being communicated.
- The adoption of inclusive strategies in health communication is recommended, with special emphasis on the choice of images (color selection is crucial in the case of color blindness) and how these images are made available. In the case of videos, subtitling is recommended, in the languages of the most prevalent migrant communities; whenever possible, they should be narrated to reinforce the message and to be more inclusive.

- The choice of images must consider the current diversity of family configurations and affective relationships.
- It is also recommended the use of images with pet animals, which are very effective in capturing attention.
- The moderate use of emojis is recommended, also when the message is addressed to older segments of the audience.

## Acknowledgments

## References

Barros, I. M. C., Alcântara, T. S., Mesquita, A. R., Santos, A. C. O., Paixão, F. P., & Lyra, D. P. (2014). The use of pictograms in the health care: A literature review. *Research in Social and Administrative Pharmacy*, *10*(5), 704–719. https://doi.org/10.1016/j.sapharm.2013.11.002

Beyfus, T. A., Dawson, N. L., Danner, C. H., Rawal, B., Gruber, P. E., & Petrou, S. P. (2016). The use of passive visual stimuli to enhance compliance with handwashing in a perioperative setting. *American Journal of Infection Control*, *44*(5), 496–499. https://doi.org/10.1016/j.ajic.2015.12.021

Bobek, E., & Tversky, B. (2016). Creating visual explanations improves learning. *Cognitive Research: Principles and Implications*, *1*(1), 27. https://doi.org/10.1186/s41235-016-0031-6

Dowse, R., & Ehlers, M. S. (2001). The evaluation of pharmaceutical pictograms in a low-literate South African population. *Patient Education and Counseling*, *45*(2), 87–99. https://doi.org/10.1016/S0738-3991(00)00197-X

Fong, G. T., Hammond, D., & Hitchman, S. C. (2009). The impact of pictures on the effectiveness of tobacco warnings. *Bulletin of the World Health Organization*, *87*(8), 640–643. https://doi.org/10.2471/BLT.09.069575

Fung, I. C.-H., Blankenship, E. B., O Ahweyevu, J., Cooper, L. K., Jackson, A. M., Jenkins, J. C., Duncan, E. A., Liang, H., Fu, K.-W., & Tse, Z. T. H. (2020). Public Health Implications of Image-

Based Social Media: A Systematic Review of Instagram, Pinterest, Tumblr, and Flickr. *The Permanente Journal*. https://doi.org/10.7812/TPP/18.307

Gaube, S., Tsivrikos, D., Dollinger, D., & Lermer, E. (2018). How a smiley protects health: A pilot intervention to improve hand hygiene in hospitals by activating injunctive norms through emoticons. *PLOS ONE*, *13*(5), e0197465. https://doi.org/10.1371/journal.pone.0197465

Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: A review of research on attention, comprehension, recall, and adherence. *Patient Education and Counseling*, *61*(2), 173–190. https://doi.org/10.1016/j.pec.2005.05.004

Jarreau, P. B., Su, L. Y.-F., Chiang, E. C.-L., Bennett, S. M., Zhang, J. S., Ferguson, M., & Algarra, D. (2021). COVID ISSUE: Visual Narratives About COVID-19 Improve Message Accessibility, Self-Efficacy, and Health Precautions. *Frontiers in Communication*, *6*. https://doi.org/10.3389/fcomm.2021.712658

Jia, L., Yang, X., & Jiang, Y. (2022). The Pet Exposure Effect: Exploring the Differential Impact of Dogs Versus Cats on Consumer Mindsets. *Journal of Marketing*, 002224292210780. https://doi.org/10.1177/00222429221078036

Kim, Y., & Kim, J. H. (2020). Using photos for public health communication: A computational analysis of the Centers for Disease Control and Prevention Instagram photos and public responses. *Health Informatics Journal*, *26*(3), 2159–2180. https://doi.org/10.1177/1460458219896673

Lotfinejad, N., Assadi, R., Aelami, M. H., & Pittet, D. (2020). Emojis in public health and how they might be used for hand hygiene and infection prevention and control. *Antimicrobial Resistance & Infection Control*, *9*(1), 27. https://doi.org/10.1186/s13756-020-0692-2

Ngoh, L. N., & Shepherd, M. D. (1997). Design, development, and evaluation of visual aids for communicating prescription drug instructions to nonliterate patients in rural Cameroon. *Patient Education and Counseling*, *31*(3), 245–261. https://doi.org/10.1016/S0738-3991(97)89866-7

Pan, S.-C., Sheng, W.-H., Tien, K.-L., Chien, K.-T., Chen, Y.-C., & Chang, S.-C. (2016). Promoting a Hand Hygiene Program Using Social Media: An Observational Study. *JMIR Public Health and Surveillance*, *2*(1), e5. https://doi.org/10.2196/publichealth.5101

Roter, D. L., Rudd, R. E., Keogh, J., & Robinson, B. (1986). Worker Produced Health Education Material for the Construction Trades. *International Quarterly of Community Health Education*, *7*(2), 109–121. https://doi.org/10.2190/FJPL-N1RH-829Q-PQRJ

Schubbe, D., Scalia, P., Yen, R. W., Saunders, C. H., Cohen, S., Elwyn, G., van den Muijsenbergh, M., & Durand, M.-A. (2020). Using pictures to convey health information: A systematic review and meta-analysis of the effects on patient and consumer health behaviors and outcomes. *Patient Education and Counseling*, *103*(10), 1935–1960. https://doi.org/10.1016/j.pec.2020.04.010

Shi, Z., Wang, A.-L., Emery, L. F., Sheerin, K. M., & Romer, D. (2016). The Importance of Relevant Emotional Arousal in the Efficacy of Pictorial Health Warnings for Cigarettes. *Nicotine & Tobacco Research*, ntw322. https://doi.org/10.1093/ntr/ntw322

Siegel, R. M., Anneken, A., Duffy, C., Simmons, K., Hudgens, M., Kate Lockhart, M., & Shelly, J. (2015). Emoticon use Increases

Plain Milk and Vegetable Purchase in a School Cafeteria without Adversely Affecting Total Milk Purchase. *Clinical Therapeutics*, *37*(9), 1938–1943. https://doi.org/10.1016/j.clinthera.2015.07.016

Stella, S. A., Stace, R. J., Knepper, B. C., Reese, S. M., Keniston, A., Burden, M., & Young, H. L. (2019). The effect of eye images and a social norms message on healthcare provider hand hygiene adherence. *Infection Control & Hospital Epidemiology*, *40*(7), 748–754. https://doi.org/10.1017/ice.2019.103

Willoughby, J. F., & Liu, S. (2018). Do pictures help tell the story? An experimental test of narrative and emojis in a health text message intervention. *Computers in Human Behavior*, *79*, 75–82. https://doi.org/10.1016/j.chb.2017.10.031