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Medical Communication and SARS-CoV-2: Novel Approaches to Global Health Crises

Communication as Called for by the W.H.O.

Jonathan de Rothewelle

Abstract

This analysis of medical comics has been conducted to respond to the WHO's call for health communication research during global health crises. This analysis uses a lens composed of the theories of semiotics, communication, and biomedical ethics, to assess the communicative value of SARS-CoV-2 comics as a form of health communication. The findings of this analysis show that medical comics could fulfil, in part, the WHO's call for more research on health communication during pandemics, suggesting that comics could be ethically and effectively used to disseminate information. The findings recommend a broader scope of the research of comics in medicine and call for standardized guidelines for their use.

Keywords: COVID-19, public health, medical communication, health humanities, discursive analysis, medical comics, patient education

1. Introduction

During the COVID-19 pandemic medical communication has been put to the test. The death toll continues to climb around the globe amidst mixed messaging and hopes for a return to *normal life*. First discovered in the Chinese city of Wuhan in 2019, COVID-19 is a disease that is a result of the SARS-CoV-2 virus. Due to mortality and infection rates, the World Health Organization designated it a global pandemic early on in its spread.

In a global health crisis, the healthcare industry and state health ministers rely on the effectual transmission of health communication. This communication must be of high quality and easily understandable. According to health crisis communication guidelines set by the WHO, communication during a pandemic is crucial. Communication must take place early on in the crisis and information must be constantly updated. The WHO also suggests that public health information disseminated during global health crises needs to be made available to those across various socioeconomic strata— that is, critical information must reach lower income populations and populations with lower literacy rates.

WHO guidelines recommend that this information be communicated jargon-free, in language that is easy to understand, and in various modalities, including the use of narrative and visuals. This research was developed to add to the body of literature that the World Health Organization calls for through its identified research gaps and recommendations for crisis communication (**Table 1**). This research presents comics as a viable option for effective and ethical communication during pandemics.

Confusion and the spread of misinformation during public health crises necessitates the exploration of new modalities of health communication. This study assesses the communicative value comics may have in clinical settings—the use of simple visuals and language is a method of health communication that may be highly effective. Information that is made personal and presented in a non-complex format may also be easier to remember.

Section	Recommendations	Summary of Findings
A1. Trust	“To build trust, risk communication interventions should link to functioning and accessible services, be transparent, timely, easy-to-understand, acknowledge uncertainty, address and engage affected populations, link to self-efficacy, and be disseminated using multiple platforms, methods and channels.”	<ul style="list-style-type: none">• To build trust during a pandemic, health authorities should focus on acknowledging uncertainty; creating scientific communication in an easy-to-understand manner; encouraging a dialogue; disseminating information through multiple platforms• Higher trust is linked to recommended actions being adopted• Trust may be based on perceptions rather than objective measures
A2. Communicating Uncertainty	“Communication by authorities to the public should include explicit information about uncertainties associated with risks, events and interventions, and indicate what is known and not known at a given time.”	<ul style="list-style-type: none">• Information provided to the public should include information about uncertainties• Information should be clear, avoid contradictions, and be presented in an easily understood manner• Information should be developed for different communities such as those of lower socioeconomic status• The manner in which a message is communicated is as important as the message content itself
B3. Capacity Building	“Preparation and training of personnel for ERC should be organized regularly and focus on coordination across involved stakeholders.”	<p>Capacities that need to be strengthened include:</p> <ul style="list-style-type: none">• Softer communication and interpersonal skills along with consensus-building• Development of communication strategies, plans and standards of practice• Translation of technical communications into understandable, contextualized material

Table 1.
Summary of World Health Organization Findings, Recommendations, and Research Gaps for Communicating Risk in Public Health Emergencies [1].

Comics could also be an important way to teach patients important skills such as asking for clarification. When presented with short and easy language accompanied by simple visuals, patients may more readily understand information [2]. In the instance of a complex virus, such as SARS-CoV-2, a simple diagram of the infected area or the virus itself may prove useful. Instead of relying upon verbal communication exclusively, simple visuals may facilitate understanding leading to higher treatment adherence, improved patient satisfaction, and a nurturing clinician-patient relationship [3]. The use of visuals, such as comics, could also be a way to mitigate fear and help patients remember vital information. Along with aiding in the mitigation of fear, humor can also aid in recall [4]. Comics for example, may be more readily able to use funny phrases and mnemonics to explain conditions.

Health communication is not a new area of research; however, there is always need for improvement as doctor-patient communication may be correlated to patient health [5]. While not always the focal point of healthcare, health communication has been recognized as needing continuous study [6]. Medical communication is considered so important that the Accreditation Council for Graduate Medical Education has made it a priority, explaining that practitioners should be able to have the ability to effectively communicate with patients as well as their care teams [7].

Motivation for this study comes from the need to improve health communication through the exploration of under-utilized modalities, such as comics, as called for by the WHO. It is hypothesized that comics could be a workable modality for health communication, in general, as well as during public health crises. As effective communication may encourage the clinician-patient relationship, improve treatment adherence, and raise patient satisfaction—communication, including that of comics, may be considered a ubiquitous tool for pandemic containment.

2. Communication and bioethics

To provide context for the following methodology and how it relates to visual analysis, biomedical ethics, and health communication, attention will be given to the theories and principles from which they come. These theories provide the scope that is used to assess if comics could fulfill, in part or in whole, the WHO's call for continued study of health information in public health crises. One such theory is that of biomedical ethics. Ethical practice is of utmost importance in medicine—and not just in a scientific context, but in areas such as health communication. The four bioethical principles as defined by T. Beauchamp and J. Childress [8] state that physicians have specific duties to their patients. Everything that a physician does must show beneficence; it must be done in an effort to benefit the patient. All actions physicians and clinicians take must be non-maleficent; they must not allow harm to come upon the patient under their watch. Patients need to feel autonomous; that is, doctors need to allow patients' input and narrative in their healthcare processes. Practitioners must always act justly; patients of all kinds have the right to be treated equally.

While these ethical principles have been the standard in healthcare for many years, their scope is more often applied to medical procedures and clinical visits. It has been argued that all aspects of health, including communication, fall under the scope of bioethical principles [9]. Upon the bioethical groundwork laid by ethicists Beauchamp and Childress [10], continuous research is important. One outlet of continuous research is the application of biomedical ethical principles to health communication.

While health communication has been extensively studied, the direct combination of biomedical ethics and communicative maxims has yet to be exhaustively explored. One governing philosophy within the study of communication are the communicative maxims as defined by philosopher H.P. Grice, which serve

as dicta for effective communication [11]. Similar to bioethical principles, these four maxims describe what a communicator is obligated to do. Communicators must be mindful of quantity; that is, communicators should not give too much or too little information. The quality of the communication is important as well; it must be truthful. Along with truthfulness, effective communication needs to be relevant; communication should focus on the task at hand. Manner is also of huge importance in communication; the context in which one communicates must be reflected in manner. These four communicative maxims, when combined with the biomedical ethical principles, serve as a foundation for this analysis of health communication. Just as communication must be appropriate in manner, relevance, quantity, and quality, it must also uphold the bioethical principles of beneficence, non-maleficence, autonomy, and justice.

While extending the scope of bioethics to include health communication, it is important to note that communication comes in many forms including comics. The study of communicative value in visuals, such as comics, may be performed using a semiotic lens. This study will assess the effectiveness of a collection of COVID-19 comics as potential tools for health communication. There are three layers to visual communication [12]: the representational, which focuses on the people, places, and objects; the interpersonal, which focuses on the creator, viewers, and characters within the image; and the compositional, which looks at the effectiveness of the composition of an image as a whole [13]. Within the semiotics of comics, there are several modalities of communication, including but not limited to facial expressions, vectors, physical proximity, and ellipses. Each of these visual facets provides meaning to a comic.

Facial expressions can bear important information; there are certain facial expressions that are iconic and may be interpreted across cultural boundaries [14], including sadness, happiness, and anger. These expressions can be used in comics to make meaning and invite understanding. Furthermore, colors play a significant role in the interpretation of images [15, 16], as colors may be associated with different emotions or ideas across cultures. Characters within visuals may also reveal information through vectors and physical proximity [17]. Vectors are lines created through gazes and gestures that serve to direct the viewer's attention to a specific part of an image. The distance of a character's placement within a visual also tells a story: the physical proximity of a person or an object within an image allows the viewer to interpret different relations [18]. For example, a person portrayed with close proximity within an image may be inviting the viewer to create a closer bond with this character. Ellipses are another way to create meaning within an image. Ellipses are intentional blank spaces within visuals that may allow the viewer of an image to use their own imagination to fill that space [19]; allowing the user to fill the space inevitably creates a closer image-viewer connection through interaction.

All of these semiotic modalities within comics have a micro-cognitive effect. Regardless as to whether or not patients are aware of these modalities, they could help lead to positive outcomes. The SARS-CoV-2 pandemic has demonstrated that the control of health communication is just as vital as the containment of the virus itself. While addressing the need for a multimodal approach to health communication, this semiotic analysis studies the effectiveness of comics as a means of such as an approach.

3. Analysis of communicative value and bioethical observance

Now that semiotics, biomedical ethics, and communicative maxims have been reviewed, this research combines these theories to form a theoretical lens

for analysis. This theoretical lens analyzes communicative value or communication elements that aid in understanding, within this collection of COVID-19 editorial cartoons. These elements of communicative value will then be further assessed to determine if they can be successfully used within health communication in accordance with communicative maxims and bioethical principles. This research was inspired by the need to continuously study health communication in general as determined by the ACGME, and more specifically to explore new modalities that aid effectual communication during global health crises and pandemics, as called for by the WHO.

In the exploration of new modalities of communication during public health crises, this analysis examines a previously untouched data set, *comics depicting the SARS-CoV-2 pandemic*, in an attempt to describe any potential communicative value that may be adapted for health communication in the future. This collection of Q&A style comics are part of an internationally syndicated comic series titled *Health Capsules*. Currently drawn by Bron Smith, these cartoons were originally conceived by Dr. Michael Petti and illustrated by Jud Hurd. These cartoons can be found on the publisher's website [20]. In general, *Health Capsules* answers everyday questions about health and wellness topics, such as exercise, when to visit a physician, allied health practices, symptoms and illnesses, and cultural notions surrounding one's health.

This collection of *Health Capsules* contains four comics that illustrate the COVID-19 pandemic, its causes, and its symptoms. This analysis is founded on the principle that health communication must adhere to bioethical standards under the scope of communicative maxims to be considered effective [21]. With the hypothesis that visual modalities may be an effective means to adhering to such standards, each semiotic element contained within the visuals will be dissected to understand further such element's implicit meaning as may be interpreted by the viewer.

The analysis will begin using a semiotic framework to examine all meaning-making modalities within the comics before proceeding to a bioethical and communicative analysis. Semiotic analysis of these COVID-19 comics will follow a visual analytic framework (**Table 2**) that questions the visual representations within, the emotional connections of, and the overall effectiveness of the visual. After this semiotic analysis to assess for communicative value, a biomedical and communicative analysis will be applied. This analysis will question whether or not the comics are appropriate in manner, relevance, quality, and quantity, and if they adhere to the beneficence of the patient, non-maleficence within medicine, a respect for autonomy, and the upholding of justice. This second step of the analysis is formed on the philosophies of the biomedical ethical principles and the communicative maxims described by H.P. Grice, T. Beauchamp, and J. Childress, and is summarized in a rubric created by J. de Rothewelle in 2019 (**Table 3**).

Visual Representations	Who are the characters present? What medical condition is being represented? Which visual modalities are used to give the comic meaning?
Emotional Connections	What emotional connections are created with the reader? What room is provided for the patient to imagine or create their own narrative? Which visual modalities are used to help emotional connections?
Overall Effectiveness	Overall, how effective is the comic as a tool for medical communication? How does the comic use language to facilitate understanding? What tools does it use to aid understanding and memory?

Table 2.
Rubric for Visual Analysis [22].

Does the discourse follow the Four Communicative Maxims?	Does the discourse comply with the Four Bioethical Principles?
1. Manner: Is this communication in a manner that is appropriate within a healthcare setting?	1. Beneficence: Does this communication work toward benefitting the patient?
2. Relevance: Is this form of communication relevant to the task at hand?	2. Non-maleficence: Does this communication disallow harm to the patient?
3. Quality: Is this communication of quality, that is does it provide true information?	3. Respect for Autonomy: Does this communication promote the patient's informed involvement in their health?
4. Quantity: Is this communication appropriate in amount for which the medium requires?	4. Justice: Does this communication represent fair distribution of health services in the community?
*If the answer to any of the above is "no," how might the discourse be altered so as to better fit communicative and ethical standards within health communication?	

Table 3.
Analysis of Communicative Value & Bioethical Observance [23].

4. Summary of findings

Using a semiotic lens to study the ethics and effectiveness of this collection of comics, this analysis has found that they employ various meaning-making modalities that are noteworthy, but would not be effective as health communication in their present form. Noteworthy communicative values as seen in these comics include: vectors, physical proximity, simple language, simple images, humor, and step-by-step instructions. Such semiotic facets within this collection of comics may be used to place emphasis, further explain, and more fully instruct the general public on health issues during a global health crisis. The findings point to the efficacy of comics as a multimodal means of health communication during global health crises as defined by the WHO.

5. Semiotic analysis of health communication: editorial cartoons

5.1 How is coronavirus spread?

In terms of visual elements, this collection of comics contains noteworthy characteristics, but is not thoroughly prepared to be used in a clinical setting. For example, in **Figure 1** there is a character that may be interpreted to be a patient, and if adapted for health communication, this character may be more specifically drawn as a patient. In comics used as health communication, the portrayal of patients, doctors, and other health professionals may allow the viewer to connect more deeply with the information presented [24–27]. Along with developing the use of characters, however, these comics could do more with representing inanimate objects such as medical supplies, procedures, body parts, and illnesses. **Figure 1** represents disease, or its symptoms quite simply: coughing.

Vectors are an important communicative value within comics. Vectors are anything that forms a line of sight directing a motion or movement within an image [28, 29]. In **Figure 1**, an arrow is used to link the name “coronavirus” with its image. In addition, the particles create a vector spraying outward from the patient’s nose and mouth. Vectors may help the viewer find the important parts of the image or determine movement within the image. In the first image, the main character sneezes and shoots COVID-19 aerosols in front of him; these particles

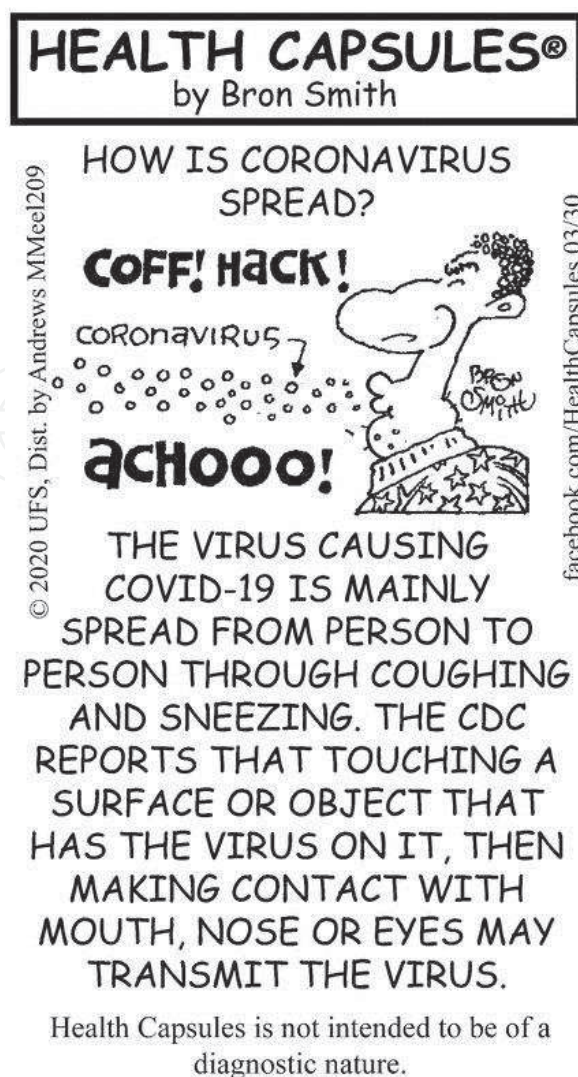


Figure 1.
How is coronavirus spread?

disseminating from this person are shown to the reader through the use of vectors. Without the use of vectors in this image, one may not understand that COVID-19 aerosols spread via air through the act of coughing.

These comics could be better adapted to suit medical communication by incorporating color. These comics are all black and white, including **Figure 1**; color can convey different moods and emotions [30, 31]; different colors represent universal thoughts or feelings [32]. For example, in many cultures the color white is associated with purity [33], while red is associated with boldness, hastiness, anger, or fear [34, 35]. These colors can be used when incorporated into medical comics by engaging the patient and assisting in the management of feelings and expectations through the use of culturally learned associations with specific colors [36]. For example, in **Figure 1**, color could be used to enhance our understanding of how the character feels: probably feverish which could be portrayed with red or orange-tint colors.

In terms of effectiveness, **Figure 1** is indeed one of the more effective comics in this collection. It explains an illness in concise and non-jargonous language accompanied by a simple image to illustrate the topic. It is easy to understand and may be informational to the patient. For such reasons, lessons of communicative value from this comic may be referenced for future development.

These visuals, along with the use of simple language to explain medical conditions or diagnoses, may be easier for the patient to digest [37, 38]. Furthermore, the link between visuals and memory is well established and thus may aid in recall of

this material in the future [39–41]. This is illustrated in **Figure 1**, as the character in the comic is portrayed as coughing, and COVID-19 aerosol particles are shown moving in a projectile motion in front of the character. By using simple visuals instead of complex language in trying to explain COVID-19's ability to spread when someone coughs, it is easier for the patient to understand through the simple image of projectile particles.

Overall, in **Figure 1**, the manner in which information is disseminated is appropriate for the medium used. With a comic as the medium of transmission, simple language is indeed appropriate. This comic presents quality information, which enables patients to make informed decisions. Information of quality allows the patient to retain their autonomy—the information is easy to understand, therefore aiding the patient in making informed decisions.

When examining the quantity of health information distributed among patients within their communities, it is important to consider the biomedical ethical principle of justice [42]. It can be determined whether or not the spread of such information upholds this principle, depending on whether the information shared with one group of patients is drastically different than what is shared with another group of patients. That is not to say that information should not be specifically created and modified for individual groups of patients to best suit their needs; rather, the bioethical principle of justice states that patients across all communities and socioeconomic strata should be treated the same [43]. All patients must receive the same quality of information in a way that is accessible to them, so they can come to appropriate decisions about their health without the privilege of one group over another. Assuming comics developed for use in clinics, hospitals, or outpatient centers alike are not only dispersed in one demographic at the disregard of another, this may be easily avoided.

The relevance of information presented to patients in medicine is highly important: this comic may therefore need an update. Although this collection was not used in a medical context, analysis shows that if it were to be used, the relevance of information would require an update. In particular, **Figure 1** places emphasis on the spread of COVID-19 via surfaces. The CDC has stated that although this is indeed a risk, it is not a central modality of transmission; and so this comic's information may need to be altered to de-emphasize this risk.

5.2 What supplements do doctors recommend for people with COVID-19?

In terms of visual representations, this comic does not detail any specific disease, or symptom. Rather, it is the general asking of questions, as in all *Health Capsules* that may have its own outlet in medicine. Similar to a *Frequently Asked Questions* brochure, comics could be developed to present FAQ information to patients more efficiently, understandably, and memorably. In any event, a more effective use would have specifically represented the discourse of the comic in the illustration. Instead of visuals that illustrate the various supplemental treatments, the viewer is presented with an image of a physician.

This image's portrayal of a doctor, who is presumably someone by the name of Dr. Pescatore, a pop-science author and internist, is exclaiming that the size of his nose is too big. Not only is this image seemingly unrelated to the topic being discussed, it may cause confusion to patients who may be led to link COVID-19 symptoms or the taking of supplements to having a big nose. As Dr. Pescatore is not a household name, one would have to research the name to establish the relevance, search if he has written anything about the nose or nasal functions, and then in the final efforts of searching, find images of him to see that he has a large nose; after

that process they may still justifiably wonder what this information has to do with anything. Unfortunately, the images and dialogue included with the written text are not on topic for the question that is asked. If comics are to be used in medical care, the images that are accompanying the text should stay on topic and only illustrate what is relevant so as not to confuse patients.

Emotional connections are highly important in healthcare as humans are emotional beings [44]. Therefore, any materials developed to be used in medicine should be aware of the emotional aspect of humanness. In this collection, **Figure 2**'s use of emotion may be helpful to a patient reading it. In **Figure 2**, the character represented is shown clearly smiling, as demonstrated by the curvature of his mouth and the orientation of his eyes. This demonstrates the universal emotion of happiness through facial features. The display of universal emotions through facial features can also help patients feel heard or represented during their care and can serve as an outlet for coping [45].

Not all emotional connections are displayed through facial features. In **Figure 2**, the use of an ominous black space, or ellipsis, to the left of the image is a tool that can help represent fear, discomfort, or the unknown [46]. When seeking medical treatment, patients may be afraid of the unknown [47]. Using an intentionally black space creates a sort of canvas for patients to imagine or even physically draw how they might be feeling or express their worry. In comics that are specifically designed

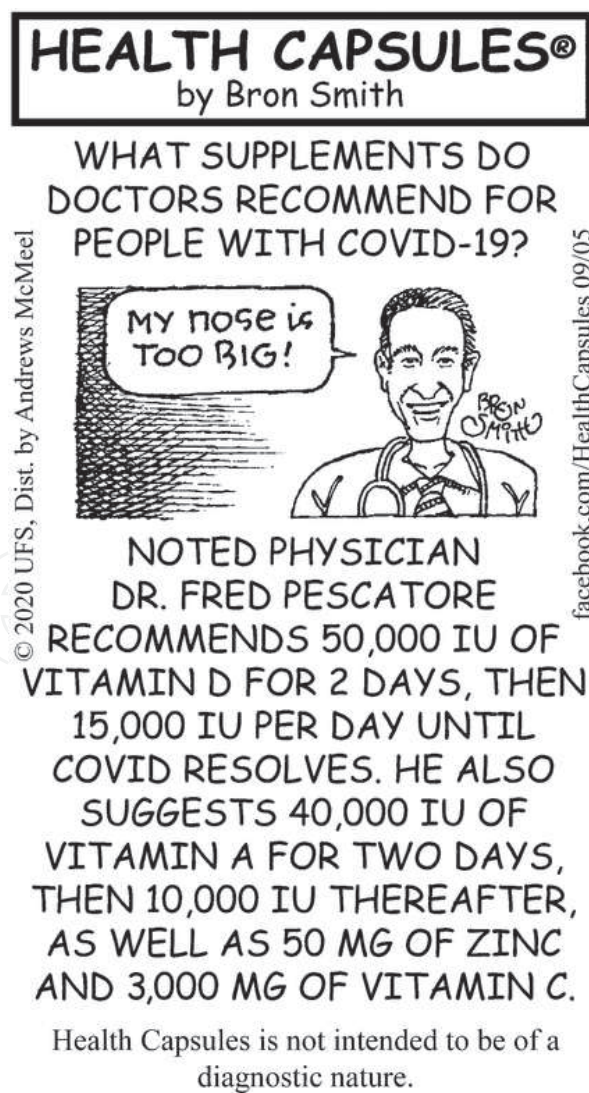


Figure 2.
What supplements do doctors recommend?

to be used in medicine, it may be helpful to include areas within the image that are black, blank, or negative space to represent the unknown and allow the patients to realize their own emotions or fears.

Along with helping to mitigate patient fear, humor is another way to aid memory. Comics tend to include humor or catchy slogans and sayings which are more likely to be remembered by the patient. Studies show that information that stands out, as well as information that elicits a response from the receiver, will be more likely remembered [4].

In this collection, the language is relatively simple and concise, and hence, appropriate in manner. However, **Figure 2** represents an exception. In this comic, the language used could be very confusing to a patient who is not familiar with dosages of supplements. To make this language more appropriate in manner, plainer phrases should be used [48, 49]. For example, a simpler phrase, such as “two doses of vitamin C for the duration of the symptoms.” Providing such dense information, such as “50,000 IU of vitamin D for two days, then 15,000 IU per day until COVID resolves” could be experienced as unnecessarily confusing, and beyond the scope of a *FAQ-style* comic.

Along with manner is the biomedical ethical principle of beneficence. Following this principle ensures that everything done within a clinical setting aims at benefiting the patient. Therefore, the manner in which medical communication is created and disseminated must also be created with the benefit of the patient in mind. Generally, the manner of information presented in this collection of comics is beneficent toward the patient. The simple level of language and information presented aids the patient by not using language that is too complex to understand. However, in **Figure 2**, it is uncertain as to whether or not the language used would be widely accessible or beneficial.

Altogether, the quality of this information for comics that are not intended to be used in medicine, could be easily adapted. For example, in **Figure 2**, there is information that is unnecessarily confusing. In a clinical environment, it is of importance to have quality information in an accessible modality available for patients. The quantity of information present in **Figure 2** is appropriate; any more information added to this small comic could cause confusion. Relevance and non-maleficence do come in to question in **Figure 2**, however. In **Figure 2**, it is asked which supplements are recommended for people who have COVID-19. The author then proceeds to accompany this text with an image of a doctor stating that his nose is too big: whatever this information is to mean, it is not entirely relevant, or not at all relevant, to the topic attempting to be communicated to patients. The information presented in the visual is vastly different than the topic and text of the comic. From a more extreme standpoint, the inclusion of non-relevant information could be viewed as maleficent.

5.3 Where did the coronavirus originate?

In **Figure 3**, the character pictured is shown in a frustrated or worried state. The portrayal of emotion in health communication may allow the patient to see such emotion and guide them toward coming to terms with their own [50, 51]. Early on in the SARS-CoV-2 pandemic, there was an arousal of worry about wearing face coverings to help prevent the spread of the virus— this character presented with a concerned expression, and asking about the efficacy of his mask, may be highly relatable to those of the general public.

In addition, in **Figure 3** language is written at a level that is accessible to people of lower literacy. However, just as in **Figure 2**, the image and its dialogue are not directly related to the main text of this comic. This could be viewed as highly confusing. Admittedly, the information about face coverings could be viewed as

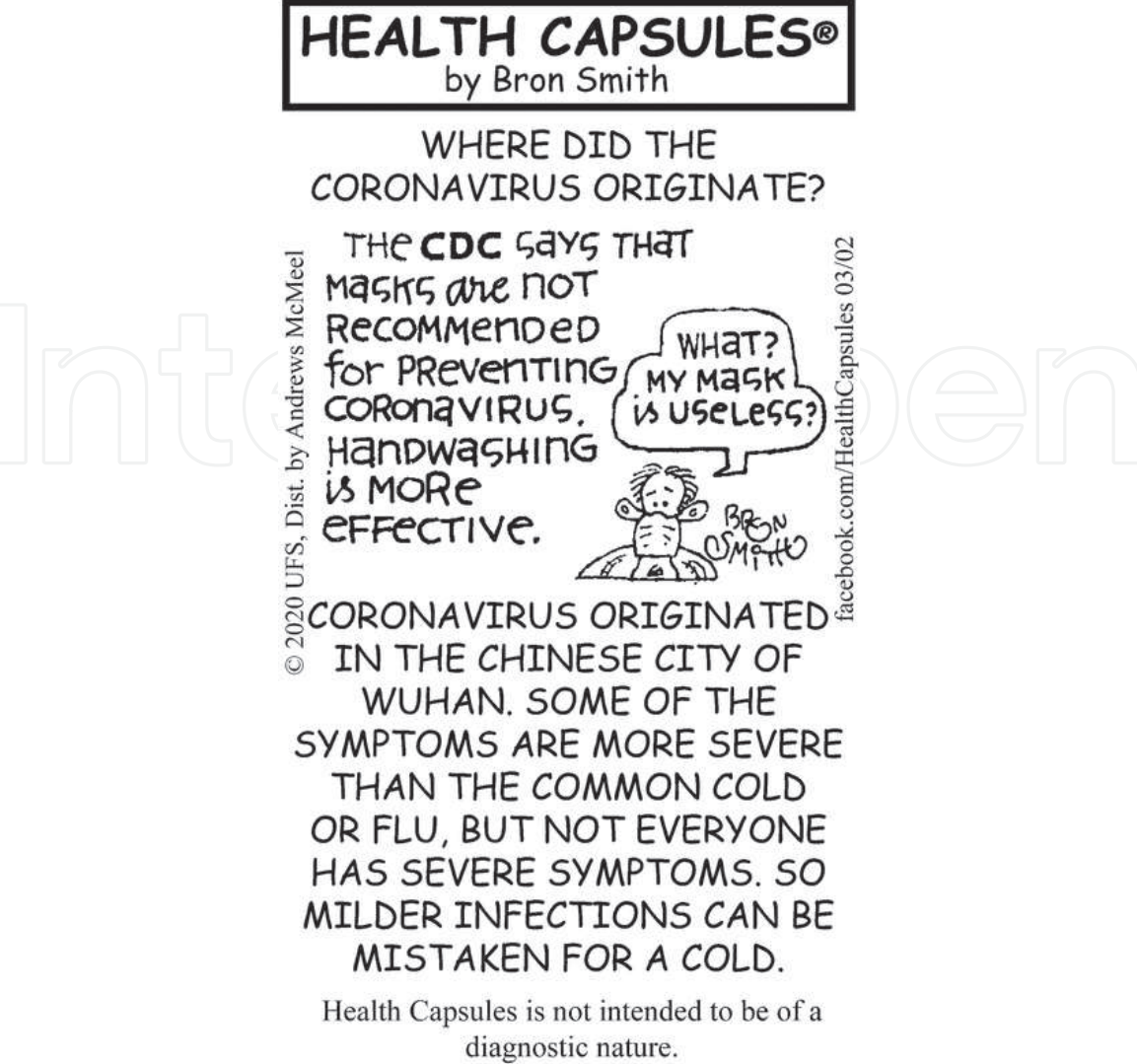


Figure 3.
Where did the coronavirus originate?

important; although, it should warrant a separate panel, so as not to distract from the main text of this comic on the topic of the origin of the coronavirus.

Physical distance between characters within the comic, or between characters and the reader, is another way that comics can create meaning [22, 52]. Depending on how close the characters within the comic are drawn to the outward face of the frame, different social connections can be established. For example, the character in **Figure 3** is drawn from the chest up. Close physical proximity to the reader invites a closer social connection to the characters within the comics. On the other hand, if a medical comic only showed characters far back in the frame with their full bodies in view, from feet to head, distance between the reader and the characters may be interpreted [37, 53]. This may have special implications during the COVID-19 pandemic when citizens are encouraged to *social distance*. The portrayal of characters physically distant from each other could serve to model appropriate behavior.

In terms of quality, there are some inaccuracies within this figure that would need to be properly corrected in order to be used in a medical setting as defined by the communicative maxims [54]. For example, in **Figure 3**, it is stated, “the CDC says masks are not recommended for preventing coronavirus.” This comic was created early on in the SARS CoV-2 pandemic when this may have been accurate; however the CDC has since reversed its stance on the subject. At the time of production this *Health Capsule* was appropriate in quality, and therefore lent itself to patient autonomy, though it no longer does so. In addition, this comic

is still freely accessible on the internet providing inaccurate information to the non-discerning viewer.

When creating health communication, it is also important to include the proper quantity of information, so as not to confuse the patient. This figure provides only brief information in response to a simple question asked. For this reason, it could be considered appropriate in the quantity of information that it provides. It is important to not give the patient too much information and leave them to sort through what is important or not. Healthcare practitioners must claim that duty and only pass along the information that is important and helpful. Though the quantity of information provided in this figure may be appropriate, other areas like manner and relevancy may need oversight.

In **Figure 3**, in which the origin of the coronavirus is in question, an answer is provided along with an illustration that is off-topic stating that masks are not recommended to be worn during the coronavirus pandemic. While this information could be valuable, it is not relevant to the task at hand within this comic and therefore should be excluded.

Rather, in cases where irrelevant information is presented to patients, it may break the principle of non-maleficence, and harm may come to the patient. In this comic the author states that masks are not recommended for preventing the coronavirus. As this information is no longer relevant to current health guidelines, the spread of this information could have negative effects on the health of the patient. To be non-maleficent and appropriate in relevance, health communication should be updated constantly or removed from circulation.

5.4 Does how I breath affect my risk of Getting COVID?

One valuable semiotic facet from this collection of COVID-19 comics comes from **Figure 4**. This comic gives a brief demonstration of how to breathe more appropriately during the COVID-19 pandemic. Such demonstrations like this may be used to inform a patient how to take their medication correctly or how a surgery will be performed; both of which provide clarity that may ease a patient's fear and aid successful treatment [55–57].

Along with **Figures 1** and **4** is another demonstration of effectiveness in this collection. It explains a health-related topic in plain language and uses visuals to guide the reader toward understanding. Of particular note is the instructional value of providing a step-by-step tutorial for the patient. In this comic, the character is asking the best way to breathe to avoid getting COVID-19. It is unknown if a particular breathing pattern significantly protects someone from contracting the virus. However, this image uses vectors in the form of arrows to demonstrate a movement in medical terms, illustrating breathing in through the nose and out through the mouth. This type of instruction may be highly effective in medical contexts to illustrate and provide clarity on important issues [58–60]. For example, using arrows or vectors can help demonstrate how a diabetic patient experiencing lower extremity swelling should keep their feet elevated until the swelling goes down.

Of course, quality health communication must be evidence based. In this *Health Capsule*, it is asked how breathing effects the risk of contracting COVID-19. After brief research, no readily-available clinical evidence on the effects of how one's breathing affects their contraction of COVID-19 has been found. Information and any materials distributed to patients must be checked for accuracy, clarity, and comprehensiveness, which requires the use of clinically proven information only.

The quality of information presented in medical settings is important when respecting the autonomy of the patient [61]. If the patient is not presented with correct information, it disregards their ability to be actively and informatively involved

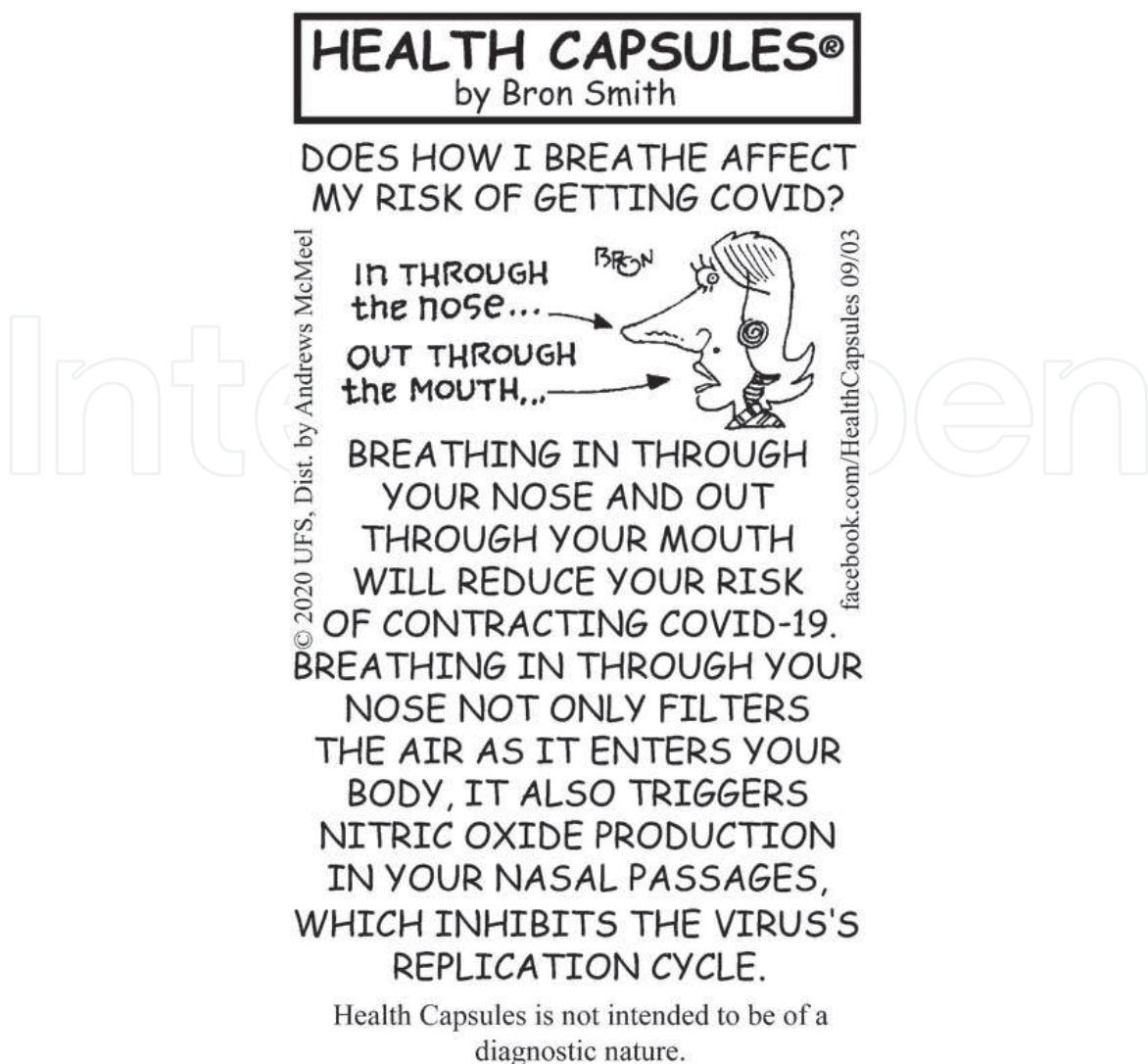


Figure 4.
Does how I breath affect my risk?

in their medical experience. As previously discussed, the quality of information presented within this collection of comics could be quite confusing and, in some places, is outdated or clinically unverifiable. If this collection were to be used in its current form in a clinical setting, the patient would not be able to achieve perfect autonomy in their health.

In health communication, relevance is of key importance, as information that is not relevant could allow harm to the patient [62]. This communicative maxim is aligned with the biomedical principle of non-maleficence. By presenting information that is relevant to the patient, and in support of the task at hand, it helps ensure the patient’s safety. **Figure 4**, may present information that could cause harm. Should this information be taken too literally, a patient may believe that simply by breathing in through their nose they can avoid contracting COVID-19, which is of course a misconstrual of information.

6. Discussion

Through the analysis of this collection of *Health Capsules* on COVID-19 as a whole, several characteristics that would be beneficial to health communication were identified. The analysis of these comics reveals that this form of communication may be effective for transmission of medical information with

implications for future use, due to the ability to increase patient understanding and recall [63–65]. These images are highly accessible to the average patient and are emotionally relatable [66]. As a response to the WHO's request for health communication research during a pandemic, this analysis posits that comics could be used as successful means of communication during public health crises because of their simplicity.

In the context of health communication, it should be readily apparent that medical comics must uphold communicative principles to be most effective in their effort to provide information to patients. Furthermore, properly vetted communication is of even more importance in medicine; if incorrect or irrelevant information is provided, bodily harm may befall the patient. For this reason, communication's potential to directly inflict harm on patients, health communication must meet biomedical ethical standards. The biomedical ethical principles state that no harm should be inflicted upon the patient. To include medical comics under the scope of health communication, it is evident that medical comics must encourage communicative and medical ethics.

Furthermore, as comics create meaningful discourse through the use of semiotics, such visual semiotic elements need to be paid appropriate attention. Semiotics show that meaning may be gathered from any part of a visual; therefore it is important that patients gather the correct meaning from what they read. Just as verbal language has its own syntactical practices, it may be beneficial for medical comics to have the same level of standardization. With the application of biomedical ethics to health communication, and comics specifically, standards must be set in order to prevent unnecessary confusion or harm. The syntax of comics has already been developed in the field of comics scholarship, as evidenced in this chapter; however, the structure and function comics as a form of health communication could benefit from further study and recommendations of best practices for their use.

As semiotic elements can create emotional connections through facial expressions, invite patient participation through ellipses, set tone through physical proximities, direct the reader's eye through vectors, aid patient recall through humor, increase comprehension through simple language, and guide patients through step-by-step instruction, they are valuable modalities within health communication, so long as they are submitted to bioethical oversight.

6.1 Emotional connections

Creating emotional connections through facial expressions may aid in connecting with the patient, as some expressions are easily recognizable and relatable [67]. For example, a patient may be portrayed as displaying anger; since this emotion transcends culture and may be treated as an iconic facial display, a patient may see this image and be able to make a stronger connection with the comic and the information contained within it. Other iconic facial expressions, such as happiness and sadness, may also be incorporated into health communication to facilitate patient understanding [68]. Relatable information may be very useful in health communication. Due to comics high accessibility, they may be a perfect modality to accomplish this. The representation of patients in medical comics may help patients feel more understood. For example, the use of angry, sad, or happy facial expressions, viewed within this collection, in a medical comic on coping with a terminal cancer diagnosis could help the patient feel justified in their emotions through the stages of their illness. The simple feeling of being understood and emotionally supported could improve the medical experience [69].

6.2 Patient participation

Patient participation may be invited through an ellipsis, or an intentional black or blank space within the image that the patient is free to fill in [70]. As interpreted from this discussion, this may allow the patient to take an active role in medical literature that may be overly focused on diagnosing or prescribing. Allowing patients to take an active role in their illness narrative has shown to increase healing and patient satisfaction [71]. In medicine, diagnosing a patient often inadvertently prescribes the patient an illness narrative; allowing the patient to be the creator of their own illness narrative and empowering them to visualize it for themselves may be an important technique to help patients find their role or their voice in their treatment [72]. For example, in a comic about a diagnosis of major depression, a panel could be left blank with a prompt encouraging the patient to draw or write how they feel. Or, in this same situation, a comic panel could be completely blackened, with a prompt asking the patient to close their eyes and imagine what this diagnosis looks like to them. These modalities allow the patient to take a more active role in their illness narrative and could also serve as a therapeutic outlet of expression.

6.3 Physical proximity

Setting tone through physical proximities could be another way to create meaning within comics as a form of health communication. This collection of comics portrayed all characters in close physical proximity— from the chest up— which may serve to create a stronger bond between characters and readers [73]. Medical practice and hospitals could be viewed as a cold experience [74, 75]; throughout such bodily positioning, the reader of medical comics is invited to make a stronger connection with what they are reading [76]. It is arguably a small difference compared to the interpersonal relationship between the patient and the doctor, but if the patient could feel more welcomed or more understood through the positioning of characters represented through visual medical literature, it may be viewed as enhancing the overall medical experience. In addition to creating a closer connection with the patient, the strategic placement of characters in comics may also portray important values. In this analysis, for example, characters placed front and center in visuals were observed. In situations where the patient may often feel overlooked, by placing the patient front and center in a visual— when the patient may not feel centrally important in their own illness experience— the patient may feel acknowledged as the center of their care.

6.4 Vectors

Directing the reader's eye through vectors guides the line of sight in certain directions to place emphasis [77]. This visual technique to portray meaning could be successfully adapted to place emphasis within comics in health communication. For example, as demonstrated in *Health Capsules*, a patient may be reading a medical comic about obesity, and instead of placing emphasis on the various symptoms depicted, vectors could be illustrated through placement of images to place emphasis on the underlying cause. For example, a comic depicting obesity could demonstrate the symptoms and emotionally acknowledge the frustrations a patient may be experiencing, while at the same time directing the reader's eye toward solutions, such as physical exercise and moderation of food intake. Whether or not a patient is cognizant of the fact that their attention is being directed in this way may not matter; what matters is the microcognitive process that follows in which the patient

may subconsciously classify the object to which their attention is being drawn, such as physical activity, as more important.

6.5 Patient recall, mitigation of fear

Aiding patient recall through humor, as a distinct type of emotional connection, may increase the memorization of information presented to patients [78]. As observed in this analysis, the use of humor may make information easier to remember and may help mitigate a patient's fear [79]. Along with information that stands out to the patient, health information that is clear and concise may be easier for patients to remember. For example, in a comic about extreme anxiety about hospital visits, the patient could be encouraged to breathe deeply through some sort of humorous approach, which would then be more likely remembered for future visits.

6.6 Simple language

Increasing comprehension through simple language is one of the easiest adaptations that can be implemented within health communication. Doctors and other medical practitioners speak their own language of highly specialized terms and codes that must be translated into plain language, so that it is accessible to all patients, as effectively demonstrated in this collection. Comics are a great media to do this, as it is typical and expected that a comic use simple and concise language with an accompanying visual. For example, instead of saying "One should exercise 5 out of 7 days a week for 75 minutes with moderate sweating to increase positive effects on body mass index, mobility, and overall health..." simpler language such as "Get outside and exercise, it's good for your health!" could more effectively reach some audiences.

6.7 Step-by-step instruction

Guiding patients through step-by-step instructions may provide a higher level of ease and less fear of the unknown [80]. For example, it need not take more than two pages to illustrate simply the processes of a laparoscopic procedure. Using comics may also be helpful in prescribing instructions for recovery. This may be especially helpful for non-native speakers of the language of treatment, patients struggling with illiteracy, or patients who are visual learners. For example, rather than verbally instructing a patient on the variety of doses and drugs to take at various times of the day with or without food, visuals may help. A visual that shows the medication type, whether pill, injection, or liquid, how to cut or measure it, perhaps a sun or a moon to depict what time of day to take it at, and illustrations of what to take it with like a meal or water, as was done in a particular case of non-English speakers at a teaching hospital in Merced, California [81], might increase patient understanding and adherence to treatment.

6.8 Asking questions

Step-by-step instructions, as illustrated in *Health Capsules*, may also include teaching patients how to ask questions when something remains unknown. Patients may not ask for clarification for a number of reasons, including fear of appearing unintelligent [82] or difficult [83], fear of a generic answer to an emotional question [84], or simply not knowing how to ask. Comics have a unique opportunity to support this problem. These comics that are in a Q&A format and ask simple or funny questions may encourage those viewing these comics to ask any questions they may have. For example, through comics depicting patients asking relatively simple

questions to their doctor, patients may realize that questions at all levels, no matter how simple, are important enough to be asked, and thus may encourage patient to seek more information about their health and treatment. Seeking information, asking questions, and receiving adequate answers have been linked to higher patient satisfaction in their healthcare [85–87].

7. Implications for further research

Using a lens founded upon philosophies from semiotics, communication, and biomedical ethics, this analysis examined the communicative value and potential use of SARS-CoV-2 *Health Capsules* as a modality of health communication in a pandemic. This study was conducted to answer the WHO's call for health communication research during global health crises and emphasizes the importance of health communication in accordance with the ACGME and other stakeholders, coming to several conclusions.

Comics have the potential to communicate appropriately in manner, relevance, quality, and quantity, as well as to disseminate medical information beneficently, justly, non-maleficently, and in a way that supports patient-autonomy. The findings of this analysis show that medical comics could fulfil in part the WHO's search for multimodal methods of health communication during pandemics.

This analysis also demonstrates that comics could be used effectively and ethically to communicate during pandemics and in health communication generally, using semiotic features, such as using facial expressions to create emotional connections, using physical proximities to set tone, using vectors to direct the reader's eye, using humor to aid recall, using simple language to increase comprehension, and using illustrated step-by-step instructions to guide patients. However, without exhaustive research on the topic, there are no current best practices for the creation of biomedically and communicatively ethical medical comics.

The findings of this analysis call for a broader scope of the use of comics in medicine and suggest standardized guidelines for their use. Guidelines that establish regularized uses of facial expressions, ellipses, vectors, physical proximity, humor, step-by-step instructions and other semiotic values typically found within comics, should be established prior to the general and widespread use of comics as means of health communication.

Author details

Jonathan de Rothewelle
Harry S Truman College, United States

*Address all correspondence to: jcomynderothewelle@gmail.com

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References

- [1] * Summarized from *Communicating risk in public health emergencies: A WHO guideline for emergency risk communication (ERC) policy and practice*. 2017. ISBN 978-92-4-155020-8
- [2] Feng, D., and K. L. O'Halloran. 2012. "Representing Emotive Meaning in Visual Images: A Social Semiotic Approach." *Journal of Pragmatics* 44 (14, November 01): 2067-2084. doi:10.1016/j.pragma.2012.10.003.
- [3] Henry SG, Matthias MS. Patient-clinician communication about pain: A conceptual model and narrative review. *Pain Medicine*. 2018;19(11):2154-2165. DOI: 10.1093/pm/pny003
- [4] Tyng CM, Amin HU, Saad MNM, Malik AS. The Influences of Emotion on Learning and Memory. *Front Psychol*. 2017;8:1454. Published 2017 Aug 24. DOI: 10.3389/fpsyg.2017.01454
- [5] Ong LM, de Haes JC, Hoos AM, Lammes FB. Doctor-patient communication: a review of the literature. *Soc Sci Med*. 1995 Apr;40(7):903-918. doi: 10.1016/0277-9536(94)00155-m. PMID: 7792630.
- [6] Ferreira-Padilla G, Ferrández-Antón T, Baleriola-Júlvez J, Braš M, Đorđević V. Communication skills in medicine: where do we come from and where are we going?. *Croat Med J*. 2015;56(3):311-314. doi:10.3325/cmj.2015.56.311.
- [7] (Accreditation Council for Graduate Medical Education 2015).
- [8] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009
- [9] de Rothewelle, JC. *Biomedical Ethics and Communicative Maxims: Case Studies in Outpatient Health*. 2020. Intech Open
- [10] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009
- [11] Grice HP. *Logic and conversation*. In: Cole P, Morgan JL, editors. *Syntax and Semantics, Speech Acts*. Vol. 3. New York: Academic Press; 1975. pp. 41-58
- [12] Kress G, Van Leeuwen T. *Multimodal Discourse: The Modes and Media of Contemporary Communication*. Oxford, UK: Oxford University Press; 2001
- [13] Kress G, Van Leeuwen T. *Multimodal Discourse: The Modes and Media of Contemporary Communication*. Oxford, UK: Oxford University Press; 2001
- [14] Forceville, C. Visual Representations of the Idealized Cognitive Model of Anger in the Asterix Album La Zizanie. *Journal of Pragmatics* 37: 69-88. doi:10.1016/j.pragma.2003.10.002.
- [15] K. Yildirim, A. Akalin-Baskaya, M.L. Hidayetoglu, Effects of indoor color on mood and cognitive performance, *Building and Environment*, Volume 42, Issue 9, 2007, Pages 3233-3240,
- [16] Wilms, L., Oberfeld, D. Color and emotion: effects of hue, saturation, and brightness. *Psychological Research* 82, 896-914 (2018). <https://doi.org/10.1007/s00426-017-0880-8>
- [17] Lister, M., and L. Wells. 2000. *Seeing beyond Belief: Cultural Studies as an Approach to Analyzing the Visual*. In *The Handbook of Visual Analysis*, 61-91, eds T. Van Leeuwen and C. Jewitt. London: Sage. 2001.
- [18] Kress G, Van Leeuwen T. *Multimodal Discourse: The Modes and Media of Contemporary*

Communication. Oxford, UK: Oxford University Press; 2001

Evanston, Illinois: Northwestern Center for Bioethics; 2012;(10)

[19] Harrison, C. 2003. "Visual Social Semiotics: Understanding How Still Images Make Meaning." *Technical Communication* 50 (1): 46-60.

[29] Juricevic I, Hcity orvath AJ. Analysis of motions in comic book cover art: Using pictorial metaphors. *Comics Grid: Journal of Comics Scholarship* [Internet]. 2016 Apr;6(1). DOI: 10.16995/cg.71

[20] www.gocomics.com, Copywrite Andrew McMeel Universal 2020.

[30] K. Yildirim, A. Akalin-Baskaya, M.L. Hidayetoglu, Effects of indoor color on mood and cognitive performance, *Building and Environment*, Volume 42, Issue 9, 2007, Pages 3233-3240,

[21] de Rothewelle, JC. *Biomedical Ethics and Communicative Maxims: Case Studies in Outpatient Health*. 2020. Intech Open

[22] de Rothewelle, JC. *Visual Pathologies: The Semiotics of the Patient and the Practitioner in Comics*. 2019 Intech open

[31] Wilms, L., Oberfeld, D. Color and emotion: effects of hue, saturation, and brightness. *Psychological Research* 82, 896-914 (2018). <https://doi.org/10.1007/s00426-017-0880-8>

[23] de Rothewelle, JC. *Biomedical Ethics and Communicative Maxims: Case Studies in Outpatient Health*. 2020. Intech Open

[32] Andrew J. Elliot and Markus A. Maier *Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans* *Annual Review of Psychology* 2014 65:1, 95-120

[24] Green MJ. Graphic storytelling and medical narrative: The use of comics in medical education. In: *The Graphic Medicine Manifesto*. University Park, Pennsylvania: The Pennsylvania State University Press; 2015

[33] Sherman GD, Clore GL. 2009. White and black are perceptual symbols of moral purity and pollution. *Psychol. Sci.* 20:1019-25

[25] Czerwicz MK. *Taking Turns: Stories from HIV/AIDS Care Unit 371*. University Park, Pennsylvania: The Pennsylvania State University Press; 2017

[34] Hill RA, Barton RA. 2005. Red enhances human performance in contests. *Nature* 435:293

[26] Chute H. Comics as literature? Reading graphic narrative. *PMLA* [Internet]. 2008 Mar;123(2):452-465. DOI: 10.1632/pmla.2008.123.2.452

[35] Pryke SR. 2009. Is red an innate or learned signal of aggression and intimidation? *Anim. Behav.* 78:393-398

[27] Bateman JA. *Text and Image*. Abingdon, United Kingdom: Routledge; 2014 May. DOI: 10.4324/9781315773971

[36] de Rothewelle, JC. *Biomedical Ethics and Communicative Maxims: Case Studies in Outpatient Health*. 2020. Intech Open

[28] Kaplan-Weinger J. Addressing loss and resilience: Informing patient care through comic narratives. *Atrium: The Report of the Northwestern Medical Humanities and Bioethics Program*.

[37] de Rothewelle, JC. *Comics and medical narrative: a visual semiotic dissection of graphic medicine*. 2018. *Journal of Graphic Novels and Comics*. Routledge.

- [38] Williams ICM. Graphic medicine: comics as medical narrative. *Medical Humanities* [Internet]. 2012 Jan;38(1):21-27. DOI: 10.1136/medhum-2011-010093
- [39] Brewer, W. F.: What is autobiographical memory? In D. Rubin (Ed.), *Autobiographical Memory* (pp. 25-Cambridge: Cambridge University Press, 1986.
- [40] Brewer, W. F.: Qualitative analysis of the recalls of randomly sampled autobiographical events. In M. M. Gruneberg, P. E. Morris, & R. N. Sykes (Eds.), *Practical Aspects of Memory: Current Research and Issues* (Vol. 1, pp. 263-268). Chichester: Wiley, 1988.
- [41] van Weert JC, van Noort G, Bol N, van Dijk L, Tates K, Jansen J. Tailored information for cancer patients on the Internet: effects of visual cues and language complexity on information recall and satisfaction. *Patient Educ Couns*. 2011 Sep;84(3):368-378. doi: 10.1016/j.pec.2011.04.006. Epub 2011 May 8. PMID: 21550757.
- [42] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009
- [43] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009
- [44] Billington, J. 2016. *Is Literature Healthy?* Oxford, United Kingdom: Oxford University Press.
- [45] jmh.2010.005603. Feng, D., and K. L. O'Halloran. 2012. "Representing Emotive Meaning in Visual Images: A Social Semiotic Approach." *Journal of Pragmatics* 44 (14, November 01): 2067-2084. doi:10.1016/j. pragma.2012.10.003.
- [46] Harrison, C. 2003. "Visual Social Semiotics: Understanding How Still Images Make Meaning." *Technical Communication* 50 (1): 46-60.
- [47] Hills LS. Working with anxious or fearful patients: a training tool for the medical practice staff. *J Med Pract Manage*. 2007 Jul-Aug;23(1):50-53. PMID: 17824264.
- [48] Linder, D., Dall'Olio, E., Gisondi, P. et al. Perception of Disease and Doctor-Patient Relationship Experienced by Patients with Psoriasis. *AM J Clin Dermatol* 10, 325-330 (2009). <https://doi.org/10.2165/11311190-000000000-00000>
- [49] Shaw A, Ibrahim S, Reid F, Ussher M, Rowlands G. Patients' perspectives of the doctor-patient relationship and information giving across a range of literacy levels. *Patient Educ Couns*. 2009 Apr;75(1):114-120. doi: 10.1016/j.pec.2008.09.026. Epub 2008 Nov 28. PMID: 19041210.
- [50] Kaplan-Weinger J. Addressing loss and resilience: Informing patient care through comic narratives. Atrium: The Report of the Northwestern Medical Humanities and Bioethics Program. Evanston, Illinois: Northwestern Center for Bioethics; 2012;(10)
- [51] jmh.2010.005603. Feng, D., and K. L. O'Halloran. 2012. "Representing Emotive Meaning in Visual Images: A Social Semiotic Approach." *Journal of Pragmatics* 44 (14, November 01): 2067-2084. doi:10.1016/j. pragma.2012.10.003.
- [52] Kaplan-Weinger J. Addressing loss and resilience: Informing patient care through comic narratives. Atrium: The Report of the Northwestern Medical Humanities and Bioethics Program. Evanston, Illinois: Northwestern Center for Bioethics; 2012;(10)
- [53] Kress, G., and T. Van Leeuwen. 2006. *Reading Images: The Grammar of Visual Design*. London & New York: Routledge.
- [54] Grice HP. Logic and conversation. In: Cole P, Morgan JL, editors. *Syntax*

and Semantics, Speech Acts. Vol. 3. New York: Academic Press; 1975. pp. 41-58

[55] Mohan A, Riley MB, Boyington D, Kripalani S. PictureRx: Illustrated medication instructions for patients with limited health literacy. *J Am Pharm Assoc* (2003). 2012;52(5):e122-e129. doi:10.1331/JAPhA.2012.11132

[56] Delp C, Jones J. Communicating information to patients: the use of cartoon illustrations to improve comprehension of instructions. *Acad Emerg Med*. 1996 Mar;3(3):264-270. doi: 10.1111/j.1553-2712.1996.tb03431.x. PMID: 8673784.

[57] Kripalani S, Robertson R, Love-Ghaffari MH, Henderson LE, Praska J, Strawder A, Katz MG, Jacobson TA. Development of an illustrated medication schedule as a low-literacy patient education tool. *Patient Educ Couns*. 2007 Jun;66(3):368-377. doi: 10.1016/j.pec.2007.01.020. Epub 2007 Mar 6. PMID: 17344015.

[58] Mohan A, Riley MB, Boyington D, Kripalani S. PictureRx: Illustrated medication instructions for patients with limited health literacy. *J Am Pharm Assoc* (2003). 2012;52(5):e122-e129. doi:10.1331/JAPhA.2012.11132

[59] Delp C, Jones J. Communicating information to patients: the use of cartoon illustrations to improve comprehension of instructions. *Acad Emerg Med*. 1996 Mar;3(3):264-270. doi: 10.1111/j.1553-2712.1996.tb03431.x. PMID: 8673784.

[60] Kripalani S, Robertson R, Love-Ghaffari MH, Henderson LE, Praska J, Strawder A, Katz MG, Jacobson TA. Development of an illustrated medication schedule as a low-literacy patient education tool. *Patient Educ Couns*. 2007 Jun;66(3):368-377. doi: 10.1016/j.pec.2007.01.020. Epub 2007 Mar 6. PMID: 17344015.

[61] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009

[62] Beauchamp T, Childress J. *Principles of Biomedical Ethics*. 6th ed. Oxford University Press; 2009

[63] Brewer, W. F.: What is autobiographical memory? In D. Rubin (Ed.), *Autobiographical Memory* (pp. 25-). Cambridge: Cambridge University Press, 1986.

[64] Brewer, W. F.: Qualitative analysis of the recalls of randomly sampled autobiographical events. In M. M. Gruneberg, P. E. Morris, & R. N. Sykes (Eds.), *Practical Aspects of Memory: Current Research and Issues* (Vol. 1, pp. 263-268). Chichester: Wiley, 1988.

[65] van Weert JC, van Noort G, Bol N, van Dijk L, Tates K, Jansen J. Tailored information for cancer patients on the Internet: effects of visual cues and language complexity on information recall and satisfaction. *Patient Educ Couns*. 2011 Sep;84(3):368-378. doi: 10.1016/j.pec.2011.04.006. Epub 2011 May 8. PMID: 21550757.

[66] Chute H. Comics as literature? Reading graphic narrative. *PMLA* [Internet]. 2008 Mar;123(2):452-465. DOI: 10.1632/pmla.2008.123.2.452

[67] Forceville, C. Visual Representations of the Idealized Cognitive Model of Anger in the Asterix Album La Zizanie. *Journal of Pragmatics* 37: 69-88. doi:10.1016/j.pragma.2003.10.002.

[68] Forceville, C. Visual Representations of the Idealized Cognitive Model of Anger in the Asterix Album La Zizanie. *Journal of Pragmatics* 37: 69-88. doi:10.1016/j.pragma.2003.10.002.

[69] Halpern, J. 2003. "What Is Clinical Empathy? Jgim." *Journal of*

General Internal Medicine 18:670-674.
doi:10.1046/j.1525-1497.2003.21017.x.

[70] Harrison, C. 2003. "Visual Social Semiotics: Understanding How Still Images Make Meaning." *Technical Communication* 50 (1): 46-60.

[71] Frank, A., . W. 2013. *The Wounded Storyteller. Body, Illness & Ethics*. Second ed. Chicago; London: University of Chicago Press.

[72] Foucault M. *The Birth of the Clinic*. Routledge; 2002 Nov. DOI: 10.4324/9780203406373

[73] Kaplan-Weinger J. Addressing loss and resilience: Informing patient care through comic narratives. *Atrium: The Report of the Northwestern Medical Humanities and Bioethics Program*. Evanston, Illinois: Northwestern Center for Bioethics; 2012;(10)

[74] Kompanje, E.J.O., van Mol, M.M. & Nijkamp, M.D. 'I just have admitted an interesting sepsis'. *Intensive Care Med* 41, 2193-2194 (2015). <https://doi.org/10.1007/s00134-015-4014-8>

[75] Haque, O., & Waytz, A. (2012). Dehumanization in Medicine: Causes, Solutions, and Functions. *Perspectives on Psychological Science*, 7(2), 176-186. Retrieved November 18, 2020, from <http://www.jstor.org/stable/41613554>

[76] Kress G, Van Leeuwen T. *Reading Images*. Routledge; 2006 Mar. DOI: 10.4324/9780203619728

[77] Lister, M., and L. Wells. 2000. Seeing beyond Belief: Cultural Studies as an Approach to Analyzing the Visual. In *The Handbook of Visual Analysis*, 61-91, eds T. Van Leeuwen and C. Jewitt. London: Sage. 2001.

[78] Tyng CM, Amin HU, Saad MNM, Malik AS. The Influences of Emotion on Learning and Memory. *Front Psychol*.

2017;8:1454. Published 2017 Aug 24. doi:10.3389/fpsyg.2017.01454

[79] Nezelek, J. B., & Derks, P. (2001). Use of humor as a coping mechanism, psychological adjustment, and social interaction, *HUMOR*, 14(4), 395-413. doi: <https://doi.org/10.1515/humr.2001.011>

[80] Hills LS. Working with anxious or fearful patients: a training tool for the medical practice staff. *J Med Pract Manage*. 2007 Jul-Aug;23(1):50-53. PMID: 17824264.

[81] Fadiman, A. *he Spirit Catches You and You Fall Down: A Hmong Child, Her American Doctors, and the Collision of Two Cultures*. FSG Classics. 2012

[82] Hills LS. Working with anxious or fearful patients: a training tool for the medical practice staff. *J Med Pract Manage*. 2007 Jul-Aug;23(1):50-53. PMID: 17824264.

[83] Authoritarian Physicians And Patients' Fear Of Being Labeled 'Difficult' Among Key Obstacles To Shared Decision Making
Dominick L. Frosch, Suepattra G. May, Katharine A.S. Rendle, Caroline Tietbohl, and Glyn Elwyn *Health Affairs* 2012 31:5, 1030-1038

[84] Beach WA, Dozier DM. Fears, Uncertainties, and Hopes: Patient-Initiated Actions and Doctors' Responses During Oncology Interviews. *J Health Commun*. 2015;20(11):1243-1254. doi: 10.1080/10810730.2015.1018644

[85] Korsch BM, Gozzi EK and Francis V (1968) Gaps in doctor-patient communication: doctor patient interaction and patient satisfaction. 855-870

[86] Kupst M, Dresser K, Schulman JL and Paul MH (1975) Evaluation of

methods to improve communication
in the physician–patient relationship.
420-429

[87] Brown R, Butow PN, Boyer MJ,
Tattersall MH. Promoting patient
participation in the cancer consultation:
evaluation of a prompt sheet and
coaching in question-asking. *Br*
J Cancer. 1999;80(1-2):242-248.
doi:10.1038/sj.bjc.6690346

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