

Using Infographics as Communicative Tools During Covid-19 Pandemic in Egypt: an Analytical Study

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ABSTRACT:

Visual story telling plays an important role in raising awareness and altering people's behavior. Numerous infographics were shared on various platforms educating, guiding and persuading the public to change their behavior through the difficult time of COVID-19 pandemic, as infographics are considered appealing effective communication tools that can enhance comprehension, recall and are also easily shared in this digital era through various platforms. This study aims to find what kinds of infographics were used to communicate this health risk during the pandemic in Egypt, in addition to the nature of the communicated messages and the aesthetic characteristics that should be taken into consideration when creating an infographic to fight such a health risk. A sample analysis was conducted on collected infographics that have been shared by governmental and nongovernmental health organizations in Egypt on their websites and verified social media platforms from 2020 to 2022, (being the official entities that are responsible of communicating credible information) to examine the visual representations that were used to educate and guide the public through this time of uncertainty. The study found that most of the issued infographics were static, the communicated messages mostly discussed the severity of the risk and guided risk mitigation. In addition to that the most used visual format or style to communicate the desired messages was illustration.

1- Introduction

Covid-19, a pandemic that has risked the health and lives of millions all over the world let humanity live a difficult time of uncertainty, where people were desperate for information to help protect them and their loved ones. In a situation like this, it is the responsibility of governments and health organizations to provide this information in order to contain the situation, to inform, educate and guide the public through this health risk. Visual communication, specifically infographics, were used by these entities to simplify complicated medical and scientific information to the general public during this global outbreak. The essence of this practice is not new to us, as humans have been thinking, learning, communicating and creating meaning from visual messages ever since the stone age in 30,000 B.C, which is evident through cave drawings in France and various other practices throughout history. However, the development of design, technology and various communication means, made the visual representation of information through infographics one of the most common ways of disseminating information to big groups of people quickly, and they were used during the COVID-19 outbreak to explain the gravity of the situation, what is expected of each individual to help reduce this health risk and help minimize the chaos resulting from spreading false information.

Aims of Research:

This research intends to examine the infographics that were used to combat this health risk during the pandemic in Egypt, in order to understand the nature of the conveyed messages, in addition to the aesthetic aspects that should be considered when producing an infographic, by answering the following research questions:

RQ1. What types of infographics were used during the COVID-19 pandemic in Egypt?

RQ2. What kind of messages were conveyed in the infographics published by various health related entities in Egypt during the pandemic?

RQ3. What are the aesthetic characteristics of designing infographics?

Method: an analysis was conducted on samples of infographics issued by various health organizations in Egypt, based on the literature and information collected. The research is based on the hypothesis that "Health organizations use visual representation of complicated medical information to help the public

understand the nature and gravity of health risk" and "illustrations of precautionary instructions could help guide the public through times of risk".

2- Infographics

An infographic (short for information graphic), tries to simplify complicated information and convey it quickly to an audience through the visualization of data and ideas, in ways that can make it easily understood. It combines data with design to enable easy quick visual learning. Nigel Holmes refers to them as "explanation graphics." (Smiciklas 2012). Infographics could include symbols, icons, charts, graphs, maps, illustrations and text. They tell stories and convey ideas in order to inform, persuade, teach, or to move people to action. (Few 2011)

There are several terms related to infographics. Some studies refer to "data visualization" as the process of developing and publishing infographics (Smiciklas 2012). Some studies use the term "data visualization" and the term "infographic" interchangeably. Other studies distinguish between the terms "information" and "data", where the term "Information" refers to knowledge in the form of words, numbers and concepts that could be communicated and the term "Data" is used to describe quantifiable information, usually displayed in numerical form (and therefore, they refer to visual representation of this quantifiable data through various charts and graphs as "data visualization"). (Lankow 2012) In this research the term data visualization will be used to refer to the process of creating and developing infographics, the term data will be used to refer to quantifiable information and therefore data visualization will refer to the various types of charts that could be used in infographics to represent quantifiable information.

3- Infographics Are Effective Communicative Devices:

Previous research has proved that infographics are effective communication tools due to the following factors: Appeal, Comprehension, Retention (Lankow 2012) and Shareability (Smiciklas 2012)

3.1- Appeal: Using colors, icons, illustrations and other graphic elements to visually represent information helps attract peoples' attention and creates interest which makes the communicated message stand out in the information overload today. This also makes the infographic more effective, engaging, and enjoyable.

3.2- Comprehension: Previous research has also

proven that there is a strong connection between the human eyes and the brain. According to research conducted by MIT titled “Brain Processing of Visual Information” approximately 50% of the brain is dedicated to visual functions. In addition to that the brain processes data from visuals all at once, unlike text which is processed in a linear manner.(Smiciklas 2012).The human brain can also sense visually in one tenth of a second(Jacob 2020),in addition to that the brain and the human visual system work as a pattern seeker, and a well-designed infographic can help the audience to identify patterns, trends and conduct comparisons very quickly within 250 milliseconds with accuracy. (Lankow 2012)

3.3- Retention: Previous studies in the field of education, conducted by The Institute for the Advancement of Research in Education (IARE) at AEL, in 2003 has proven that students were able to recall and retain information that was provided to them using graphic elements and visual aids within the educational process (Bicen,H. , Beheshti,M.(2017).

3.4-Shareability: Infographics have the advantage of being easily and quickly circulated between individuals and entities especially in this digital age through the internet and various social media platforms (Smiciklas 2012). Social media platforms also enable two-way communication between the authorities and the public which enables discussions and engagement around the content of the infographic.

4-Types of Infographics

There are various categorizations of infographics in previous studies, for example they could be classified into data graphics, maps (geospatial spread), and diagrams (Otten, Cheng, Drewnowski 2015), that could be either: static (fixed visuals, the most commonly used type, easy to make and share, especially time sensitive data), moving(movement of the visual elements, more engaging for the audience, could include voice over and/or music which adds an emotional appeal) and interactive (dynamic, ideally used to convey large amounts of information, requires the audience participation to reveal all the levels of data, like clicking to view the next slide or using AR technology). (Lankow 2012). Other Studies categories them into: data visualization or statistical based (tables, lists and bar charts), timeline based or chronology (timelines, comparisons, hierarchical and anatomical illustrations), process-based infographics (a linear process/procedure of a topic) and Location or Geography

Based (maps icons and symbols) (Siricharoen 2013). Infographics also have different narratives, they can either be explanatory (aim to instruct or inform), editorial (aim to suggest value judgments), persuasive (aim to influence), or exploratory (aim to test hypotheses)(Otten, Cheng, Drewnowski 2015).

Health, Risk and Outbreak Communication:

The communication activities that are carried in the areas of Health, Risk and Outbreak are vital.Health communication aims to combat health concerns by instilling positive behaviour in individuals (Bhattacharyya & Roy, 2016).People need to know what health dangers they are facing and what steps they can take to safeguard their health and life during public health emergencies like pandemics, and humanitarian crises and natural disasters. That is why it is important to communicate precise information that is delivered early, regularly and using languages and communication mediums that people understand, trust, and use. In addition to that any emergency response from official entities entails effective risk communication. (World Health Organization, 2017). Before, during, and after a crisis or an outbreak, communication activities allow national and local government authorities don't just provide information to the public but also promote effective information and opinion exchange among scientists, public health, and veterinary experts specially during the alert phase to better evaluate, direct, and organize preparedness and response activities. These communication activities also aim to sustain the public's trust in these organizations and communicate expectations about the capability to act and administer an outbreak and lessen disruption in the society. (World Health Organization 2012)

5-Using Infographics in Health-Risk Communication:

Infographics related to the field of health have been used as early as the 1800s and have included bubbles, 3D charts and contour blocks. In 1858, Florence Nightingale prepared an infographic about the Crimean War which was in the form of coxcomb chart.The infographic clarified that death rates due to poor sanitary conditions exceeded death rates due to battle wounds within the British army and helped convince the queen to enhance health care facilities. Furthermore, in 1859 Dr John Snow published an infographic, which portrayed the outbreak of cholera and convinced many on the spread of cholera. Today, infographics simplify complicated medical informa-

tion into visual representations that helps the viewer understand how a disease can occur, be treated, and prevented. (Jacob 2020). They can also be used to calm the public or increase their fear. A study conducted by Ancker et al. in 2006 stated that the awareness of health risks can increase due efficient risk communication and also encourage risk-reducing behavior. The positive impacts of visual components on quantitative risk reasoning, risk assessment, risk estimation, risk interpretation, risk perceptions, and risk behaviors have been proven in several researches as the effective use of maps, bar and line graphs and color plays an important role in communicating risk, enhance understanding, and increasing confidence in interpretation. (Turchioe, et al., 2019)

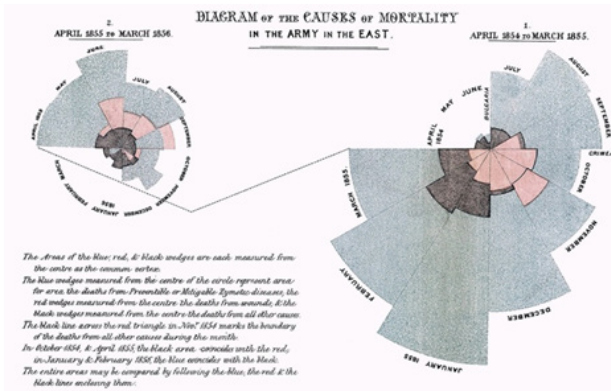


Figure 1 Florence Nightingale's Causes of Mortality Infographic 1858

6-Strategic Message Characteristics and objectives in Health- Risk Communication

Some previous studies have identified Severity, Vulnerability and Efficacy as strategic elements in the contents of communicated messages in health and risk communications, that play an important role formulating individuals' perspective towards the risk related issues (Shin 2016). A study conducted by Yixuan Zhang et al. in 2021 that analyzed 668 visualizations that communicate information about COVID-19, also found that the communicated messages mainly aimed to fulfill these six objectives: Severity, Forecasting trends and influences, Explaining the nature of the crisis, Guiding risk mitigation, Communicating risk, Vulnerability, and equity, Gauging the multifaceted impacts of the crisis. Each type of message can influence the audience differently.

6.1- Severity refers to the threatening degree of the potential risk, it explains the effect of the threat on one's welfare (Shin 2016). It is commonly used in

health risk communication to raise awareness about the health risk, shape perceptions and encourage behaviour change. (Witte & Allen, 2000). Some of the infographics used to fulfil this communication objective represented the number of infected, hospitalized, cured patients and deaths. Also, the ones that showed the virus's geospatial spread and its trajectory overtime, in addition to the representations that compared COVID-19 to similar historic events. (Zhang et al. 2021)

6.2-Explaining The Nature Of The Crisis: using information to explain the construction of the virus, methods of disease transmission, the symptoms sick patients experience (also help the audience distinguish between other diseases like flue or allergy and COVID-19), diagnostic timelines and contact tracing (clarify the spread of the virus by showing how an individual might have got infected by getting in touch with a person carrying the virus, whether on an individual level or in groups, this could include timelines and movement trails, networks, groups and sources or spreaders). (Zhang et al. 2021)

6.3-Efficacy/ Guiding Risk Mitigation: Mainly providing instructions and recommendations that individuals need to follow to avoid or reduce the risk (Martin, Bender, & Raish, 2007), like encouraging individuals not to share various types of equipment, methods of upholding adequate levels of hygiene, promoting social distancing, in addition to clarifications of certain strategies that were used to reduce the risk. This category also includes the "flattening the curve" based messages specially when healthcare systems reached their maximum capacity stressing on personal responsibility. (Zhang et al. 2021)

6.4-Forecasting Trends and Influences: These types of messages contain a degree of uncertainty, infographics in this category were made to show approximations of current transmission (prediction intervals), effective reproduction rate, and comparing projection results of multiple models or different scenarios, helping the audience understand and predict future events related to the pandemic by demonstrating different strategies and hypothetical results, like visualizations that show how the spread off the virus could be affected by taking certain prevention measures. (Zhang et al. 2021)

6.5-Communicating Risk, Vulnerability, And Equity: Vulnerability is the degree of being at risk, some infographics in this category communicated how certain groups of people have a higher possibility of being at risk due to various aspects like demographics

(age, income, gender) medical conditions and access to health care. That is why this category also includes infographics that show accessibility and allocation of health care recourses (such as the geospatial spread of hospitals and social support groups). These types of messages influence the audiences' risk assessment and encourages certain behavior to avoid it. De Hoog et al., 2007; Strong et al., 1993). Vulnerability also explains the degree of experiencing negative consequences when not following recommended instructions

6.6-Gauging the Multifaceted Impacts of The Crisis: Infographics in this category communicated the change that has happened in life due to the risk as the pandemic had a diverse broad impact on the economy (rated of unemployment & GDP, business sales), society (lock downs, quarantines, schools closures), on the environment (pollution) and also documents the measures that were taken to reduce the risk which could affect the public's trust in governmental officials and the decisions that they make. (Yixuan Zhang et al. 2021)

7- Aesthetic and Technical factors to consider when designing infographics:

Cawthon and Vande Moere found that appealing visualizations led to increased task engagement. Graphics can also influence a person's feelings (whether positive or negative) and their understanding of the communicated message (Leshner et al., 2009). There is a great deal of flexibility in designing infographics as there are several possibilities depending on the type and amount of available information and the story we want to tell. A good design approach entails understanding the information, the audience (recipient), the sender of the message and the objective of communication, in order to choose the appropriate visual language and encode the information into graphic elements that audience could be easily decode, understand and relate to. In cases like the pandemic, designers are mostly communicating to a broad international audience and therefore must break language and cultural barriers. The following design considerations should be addressed:

7.1- Simplicity and Comprehensive easiness: The degree to which infographics may be understood at a glance, using a limited number of graphic elements shapes, fonts and colors, to make the message clear (Shin 2016), as overwhelming crowded infographics could cause confusion. Designers should work on creating a smooth flow of information without compro-

mising comprehension and consider breaking down the detailed information into manageable chunks. One should ask: Can you understand the visualization in 30 second or less? (Ferreira 2014)

7.2- Choosing the appropriate visuals

The public's perception of risk is affected by different graphic design formats. (Leshner, Bolls, & Thomas, 2009). Therefore, some studies suggested practitioners should choose different graphics elements and formats for strategic communications, based on the purpose of their messages (Shin, 2016) (Ancker et al., 2006). Like choosing between Illustration or data visualization (various forms of charts, as referred to by some studies) or mix between both as long as they fulfil the utility (achieving communication objective), attractiveness (appropriate visual solution) and soundness (meaningful and ethical) factors (Lankow, 2012). Creating balance between the type (text) and ratio of graphic elements and descriptive text can also attract attention and enhance the viewers comprehension and retention (Borkin et al., 2013).

7.2.1- Illustration: refers to a hand-drawn or vector-based depiction of an object. In infographics, we can use illustration to display the anatomy of an object, to instruct and clarify a certain concept, or to add aesthetic appeal. There are various styles of illustrations, designers should choose the simple styles to ensure the clarity and quick understanding of the of the message, as long as they master the executed style. Illustrations used should support the communicated data and not distract the audience from it. Good illustration can create value and support the storytelling process. (Lankow, 2012)

7.2.2- Data Visualization (quantifiable information): Various types of charts are usually are used to convey unbiased view of data, however, before designing data, designers need to understand data types and relationships, and the purpose of the communicated message in order to choose the appropriate type of charts to use to encode the data, as different types of charts and graphs are more appropriate in displaying certain types of information and relationships than others, the most common types of relationships are:

7.2.2.1-Nominal comparisons: Representing nominal scale, displaying several subcategories of quantitative values so that they could be easily compared to each other, such as X is larger than Y and B is twice as C. Each category should be clearly represented independently that is why bar graphs could be suitable in this case, or a dot plot (similar to bar chart in which dots replace the bars) and bubble charts.

7.2.2.2-Time series: usually used to show trends and the change of a certain value over time, line graphs, bar graphs are usually used where time is usually represented moving from left to right and not up and down this is why horizontal charts are usually illiminated. (Lankow,2012). A coxcomb chart could also be used to represent a cyclic phenomenon. It looks like a pie chart combined with some of the features of a stacked bar chart, where each slice within a polar area diagram is equal in angle but different in area and radius (also called polar area diagram).

7.2.2.3-Ranking: Communicating order from high to low or viscera, bar graphs could be used to explain this type of relationship, because it is easy to understand the difference in the bar lengths that share the same baseline, dot plots could also be used. When representing analysis on a correlation, a scatter plot could be used (showing relationships between measures).

7.2.2.4-Part to whole: Representing a ratio and percentages, pie charts are usually used and also stacked bar graphs and isotype array charts (part to whole relationship between positive and negative outcomes. (Lankow,2012).

7.2.2.5- Geographical data: maps are usually used when representing geographical data, they could also be combined with other forms of charts (like bar graphs) depending on the type of information that is communicated. (Tableau.com)

7.3- Colors: In a research conducted by Bell et al., 2006, it was argued that a well-selected color can help the audience understand the visualizations easily. Color is a powerful visual communication tool that can also evoke emotion, attract attention and add visual appeal. Applying color theories and taking the psychological effects of color into consideration (like using red to communicate danger and white for cleanliness) enhance the cognitive process. (Shin 2016) An experiment conducted by Lane Harrison 2015, in which participants were presented with a number of infographics in a very short time (500ms) to test the power of the first impression, found that colorfulness of infographics was more effective in terms of appeal than visual complexity. Color distribution is also important, Donnelly, & McGlade, 2016 for example found that using bold colors in the communicated information and pale colors in the background helped emphasize on key messages in charts like the charticle for example. Designers should also limit the number of colors used generally and when applying color

coding to certain values it is advised to not use more than 12 colors for 12 distinct values (Tableau.com)

7.4- Legibility: The selection of an appropriate simple typeface and other factors like text orientation, text color effects legibility, it's also easier to read horizontal text than vertical (in case of writing in English language) .Using only 2 to 3 fonts and limiting the edits in the font attributes (bold, italic, serif quality) and using dark grey for example for labels and axis helps the viewer focus on the important information and reduced distractions. Also consistency in style, meaning that all titles have the same font for example. (Tableau.com)

8- Methodology:

A number of infographics addressing the COVID-19 pandemic in Egypt were collected during the period of 2019-2022.The samples were selected from the official websites and official verified pages on social media platforms of The Ministry of Health in Egypt(such as Twitter, Instagram, Facebook), as it is the main governmental affiliated health organization in the country, in addition to samples issued by international health organizations that either have operating offices in Egypt or regional offices, like The World Health Organization (WHO), UNICEF, United Nations (UN), as they were the entities responsible of communicating credible information to the public and health officials during this crisis, to help them understand the nature of the risk, influence their perception of it and encourage them to follow instructions and recommendations to help contain the situation. These organizations have also cooperated with Egyptian Government in conducting risk communication campaigns addressed to the public using various communication mediums (TV, Radio, Social Media, Print collateral and outdoor advertising...) in order to help contain this global risk. Most of the collected samples are in Arabic language as it the official language of the country and it would be understood by the general public from various education levels.

A sample analysis was conducted on only 5 infographics to examine the nature of the communicated messages, based on the the following factors: the type of infographic (static, moving, interactive), objectives of communication and strategic message characteristics (severity, forecasting trends and influences, explaining the nature of the crisis, guiding risk mitigation, communicating risk,

vulnerability, and equity, and gauging the multifaceted impacts of the crisis) and aesthetic qualities (visual style-data visualization or illustration – and graphic elements such colors and legibility...) interactivity -if applicable- and sound -if applicable-.

Limitations: published infographics related to Covid-19 virus during the years 2019-2022 by various health Organizations in Egypt.

9- Analysis:

Sample (1)



Figure 2²: A sample of Covid-19 daily report issued by the Egyptian Ministry of Health 23 Feb 2021

Description: Daily Counter (also called Daily Covid-19 report), issued on a daily basis since the announcement of the virus outbreak in 2019. This one was issued by the Egyptian Ministry of Health on February 23rd. 2021

Type: Static

Source/Sender: Egyptian Ministry of Health

Strategic Characteristics/Communication Objective:	
Severity The infographic communicates how serious the virus is by displaying the number of people infected today (top right), the total number of people infected so far (bottom right), number of deaths today (top left), total number of deaths so far (bottom left) and the total number of cured people so far(middle).It was issued on a daily basis since 2019, however during the first quarter of 2022 it was only released on a weekly basis as most of the population was getting vaccinated and the number of infections was generally decreasing and national and international entities decided to open up and there were no more lockdowns.	
Aesthetic Qualities	
Type of Visuals	Data Visualization, the information is numerical

Visual Style	Bubble chart to show the independent numerical data, the problem is that the circles are all same size, using different sizes could be more appropriate with larger numbers and help reinforce the desired message, the layout is also symmetrical which is clear a bit boring and lacks visual appeal. Placing the total number of cured in the center makes it a focal point probably to calm the public and give a sense of hope.
Color	Contrasting color scheme blue and red. Dark blue background white bubbles and numbers are displayed in red in order to stand out. Red also indicates danger which emphasizes on the threat of the risk. Blue symbolizes knowledge and trust These are also the colors of the identity of the Egyptian Ministry of Health.
Legibility	Used Arabic fonts for the titles needed to be a bit bigger in size and bold. The layout of infographic effected legibility because of the equal sized circles, when the numbers exceeded 5 or 6 digits, they become difficult to read and seem compressed within the circle, not very easy on the eye. Red numbers on white backgrounds and white titles on dark blue backgrounds are legible.
Interactivity	Not applicable
Sound	Not applicable

Table (1) Infographic sample number 1 analysis³

Sample (2)



Figure 3⁴: An infographic demonstrating how to wear a mask

Description:

This infographic demonstrates the proper way to wear a mask, issued on the Facebook page of the World Health Organization 31 December 2020.

Type: Static

Source/Sender: This infographic was issued as a collaboration between the Egyptian Ministry of Health and The World Health Organization.

Strategic Characteristics/Communication Objective:	
Guiding Risk Mitigation The infographic demonstrates the proper way to wear a mask, which is important to reduce the virus spread. Many a lot of people were witnessed wearing the mask in various ways that were not properly covering the entire mouth and nose area (as demonstrated in the infographic) which made the mask ineffective, that is why it was important to communicate this preventive measure to the general public and encourage them to change their behavior.	
Aesthetic Qualities	
Type of Visuals	illustration
Visual Style	Simple flat 2d illustrations of characters, no shading, clear and easily understood. At the center of the infographic there are 3 figures, the one of the top is wearing the mask properly and is slightly bigger in size, there's a green checkmark to indicate that it is correct, the other 2 below show improper ways of wearing the mask, only covering the chin or only covering the mouth and have red cross marks to indicate that they are wrong. At the top there's a title: "The proper way to wear the Mask". Silhouettes of the shapes of the virus are floating in the background with no entry signs to indicate the prevention of the virus spread. There is also a hotline to call in case of infection (105) the bottom right corner. Although the characters are in the

	center with makes them a focal point, the layout is symmetrical and lacks visual appeal.
Color	Same red and blue found in the previous sample and the next ones. Also, color coding is applied, green refers to correct practice (with a check mark next to it) and red for wrong practice (with a cross mark next to it)
Legibility	The chosen typeface is legible, the title in the red rectangle stands out due to the contrast but it's a bit uncomfortable on the eye due to the bright red tone used and the shadow effect on the text.
Interactivity	Not applicable
Sound	Not applicable

Table (2) Infographic sample number 1 analysis⁵

Sample (3)



Figure 4⁶: An infographic demonstrating the Proper way to wear a mask

Description: This infographic explains what COVID-19 is, its symptoms and how it is transmitted.

Type: Static

Source/Sender: This infographic was issued as a collaboration between the Egyptian Ministry of Health and The World Health Organization

Strategic Characteristics/Communication Objective:	
Explaining the Nature of The Crisis The infographic explains that the Corona virus family is composed from animal source viruses that transfer between animals and from animals to humans(top right), then it clarifies some of the main symptoms that patients experience, fever, cough, breathing difficulties(bottom right).It could be transmitted through droplets from sneezing, coughing, the eyes and runny nose(top left). It also encourages the public to visit the hospital if they start to develop any symptoms (bottom left).	
Aesthetic Qualities	
Type of Visuals	Illustration
Visual Style	Simple 2d character illustrations, the black silhouettes in the top right corner explaining the source of the virus make it look mysterious, the layout is symmetrical which considered visually boring. The different characters in the infographic are drawn in different visual styles which is considered inconsistent. The illustrations indicating the symptoms are quite small needed to be bigger and clearer. The center of the design (a focal point) is an illustration of happy healthy children and health care workers, which in the researcher's opinion is a secondary element, it is the result we want to achieve; however, the design should have clarified other elements that are related to the communication objective.

Color	Blue and Red, yellow-green which is related to illness used in small portions as it is not a pleasant color. The pale color in the background helps the information stand out.
Legibility	The Arabic font used is difficult to read due to the extension of the X-height and the decrease of the width of the letter specially in the light weight version of it used in the explanation, the bold version used in the titles are clearer than the explanation.
Interactivity	Not applicable
Sound	Not applicable

Table (3) Infographic sample number 1 analysis⁷

Sample (4)



Figure 5⁸: screenshots of moving infographic encouraging safety measures to be taken during gatherings in the holy month of Ramadan

Description: Infographic explaining safety precautions to be taken during the gatherings of the holy month of Ramadan, April 2021

Type: Moving

Source/Sender: This infographic was issued as a collaboration between the Egyptian Ministry of Health, The World Health Organization and the UNICEF.

Strategic Characteristics/Communication Objective:	
Guiding Risk Mitigation The infographic recommends instruction to prevent the virus spread during the holy month of Ramadan, where people get together to share a meal during the time of breaking their fasting(iftar) by taking certain measures like eating in open area, keeping social distancing and encouraging any of the group members to report to the others in case they develop any symptoms.	
Aesthetic Qualities	
Type of Visuals	Mixture of illustration and written text
Visual Style	Simple 2d character illustrations, with minimal elements in the background and an Islamic art ornament to represent the holy month of Ramadan. The character illustrations are simple, expressive (body language and gestures) they are also visually appealing and help communicate the desired message. The light blue organic shapes in the background gives the overall design a friendly look. However, the Islamic ornament is quite large and it's not really balanced in the design, there's always a larger visual weight at the bottom left corner.
Color	Mostly Blue and red-orange. The white background takes a large space in the design, it makes the information easily understood as the colored characters and objects stand out, it is also appealing and easy on the eye.

Legibility	The used Arabic font is legible due to both the typeface design (appropriate X height, Y height and counter forms) and the contrasting colors (blue letters on white background).
Sound	Narration added in the background, reading the captions, the voice of a friendly female that that helps the viewer to follow the different parts of the communicated message
Interactivity	Not applicable

Table (4) Infographic sample number 4 analysis⁹

Sample (5)

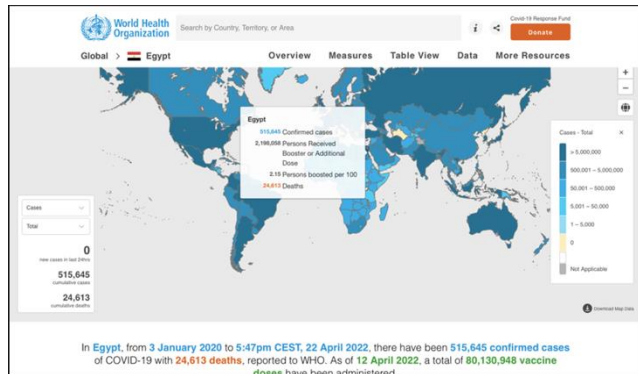


Figure 6¹⁰screenshots of WHO website interactive infographic showing geographic spread of COVID-19

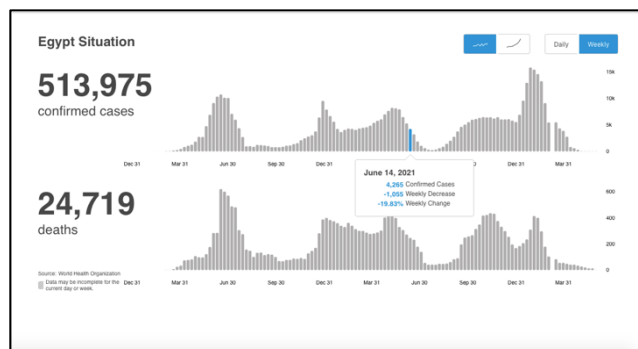


Figure 7¹¹: screenshots of who website interactive infographic showing statistical data (number of infections and deaths) specifically in Egypt

Description: These are 2 infographics, are related to each other, displayed after one another on the website of the WHO, explaining the COVID-19 Situation in Egypt until April 2022, found on the WHO official website.

Type: Interactive

Source/Sender: The World Health Organization

Strategic Characteristics/ Communication Objective:	
Severity	
1-In the first infographic, the world map shows the geo-spacial spread of the virus. 2- In the second infographic, the bar charts demonstrate a time series relationship, clarifying the increase/decrease of the infected cases by time and in the one on top and deaths in the one on the bottom by time.	
Aesthetic Qualities	
Type of Visuals	Data Visualization
Visual Style	-1- Map: world map indicating the geo-spacial spread of the virus different shades of blue indicate different levels of risk, the darker the shade of blue, the more cases and the more severe the risk is, as indicated in the colored map key at the left (the darkest shade represent areas with more than five million cases). -2- Charts: Demonstrating Trends over time. (2 Time lines/bar charts). In both of them the X axis contains the date, the Y axis contains numbers in thousands. The last bar at the far right is dashed to indicate uncertainty and it is clarified in the key at the bottom left that the data is still incomplete for the current day/week which emphasizes on the credibility of the entity. However, it is not very clear researcher suggests maybe that it would be indicated using a different color. The bar chart is a good choice easy to understand the taller the bar, the higher the number.
Color	Shades of blue and grey. This color combination gives the infographic a serious professional look, it is also

	appealing. Grey is neutral. The blue represents trust and knowledge. It also helps the viewer focus on the information presented. Blue also enforces the visual identity of the WHO.
Legibility	Legible clear fonts are used, appropriate point size, color choices also ensure legibility
Sound	Not applicable
Interactivity	1-Map: When you hover with mouse over a certain country a pop-up window appears with detailed information on the number of confirmed cases, number of vaccine booster shots received and deaths. 2-Timeline/bar chart: In the first bar chart on top, when you hover with mouse over a certain bar, it turns blue and a popup window appears revealing the number of Confirmed cases, weekly change and weekly decrease (in percentage). In the second bar chart(bottom) when you hover with mouse over a certain bar it reveals the number of deaths, weekly decrease, weekly change (in percentage).Turning this infographic into an interactive type was a wise choice due to the enormous amount of data that it contains, the audience will probably be interested in finding out information about a limited number of countries not all the countries of the world, which gives them a quick access to the exact information they need. The audience can also choose to see the numbers on daily or weekly basis by clicking on the buttons on the top right.

Table (5) Infographic sample number 5 analysis¹²

10- Results and Discussion:

It was found that regarding the objectives of communication and strategic message characteristics most of the collected the infographics fall under the “Guiding Risk

Mitigation” category as many infographics demonstrate instructions that people need follow to decrease the spread of the virus. Severity of the virus was also communicated specially in one of the most commonly found infographics which was the daily counter/report, that constantly reminds the public of the danger of the risk. In addition to that a few collected samples in the early stages of the pandemic explain the nature of the risk. The researcher hasn't come across any samples issued by the Ministry of health or other health entities in Egypt that cover “Gauging the Multifaceted Impacts of The Crisis” nor the “Forecasting Influences and Trends”. Most of the samples found were static this is probably because they are easy to make and distribute, some were moving with music and narration in the background. Interactive infographics were rarely found on the official sites/social media platforms, probably because they require more time and are most costly to produce, in addition to that the static infographics contain a specific simplified message that is easier for the public to understand, follow and share.

In terms of design and aesthetic qualities, only few data visualizations were used to clarify the severity of the health risk and illustrations were mostly used to communicate with the public, due to nature of the mostly commonly communicated messages, “Guiding Risk Mitigation” and “Explain the nature of the risk”, as they can clearly represent and demonstrate the instructions and the recommendations given by the officials, easily understood by the general public and are more appealing, as illustration can be used to clarify objects, facial expressions, methods and precautions like social distancing. The illustration style is simple 2d, however the illustration styles change a little in various infographics which jeopardizes visual consistency and sense of unity between the messages that should be communicated from the same source, this is evident through the different illustration styles in the characters/figures used. Icons are sometimes used as well, due to their simplicity in order to increase comprehension. The colors blue and red were dominant in most of the designs, they are the dominant colors of the identity of the Egyptian Ministry of Health in addition to that blue is the

color of knowledge it is easy on the eye and enhances comprehension, red attracts attention, signifies danger/alert. The blue color was dominant in all infographics regardless of their source, blue indicates knowledge and helps legibility and is also one of dominant colors of the visual identity of all the chosen healthcare entities.

11- Conclusion

Infographics play an important role in communicating health risks specially in times of global uncertainty such as COVID-19 pandemic, where International entities collaborated with governmental affiliated health entities to provide the public with credible information and instructions to help protect them and their loved ones and help reduce the spread of the risk. Aesthetic qualities and strategic message characteristics and communication objectives work hand in hand to communicate visual representations that are appealing, easily understood, recalled and shared.

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