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A Factual Content Analysis of Facebook Infodemic in Algeria

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Abstract

This paper identifies shared contents related to COVID-19 by Algerian Facebook users and aims to categorize them according to their level of truthfulness and harm. In addition, the paper reveals how the content and linguistic features contribute to the verification of the shared information's (dis)factuality and (in)validity. A corpus of Facebook infodemic in Algeria (CoFIA) is compiled for the analysis. First, a factual analysis is conducted for the purpose of infodemic categorization into mis-, dis-, and mal-information. Second, a qualitative content analysis is used to highlight the harm of the information type by discussing major linguistic features found in those categories of information. Online fact-checking tools supported the confirmation of information disorders. Misinformation found in CoFIA was 46.77 %, disinformation was 36.22 %, and mal-information was 22 %. Besides, the content and linguistic aspects of the posts contributed to a considerable extent to the verification of the information type and the actors' intentions to mislead and/or harm. Algerian Facebook users and even official pages did not recognize the risks of misinformation with the COVID-19 outbreak. Raising public awareness about the impacts of information on social media was recommended to precede such a health emergency.

Keywords: Infodemic, Facebook, COVID-19, content analysis, Algeria.

1. Introduction

It has become increasingly difficult to believe all information representing a given crisis or to trust all sources and consider them unquestionable about the realities of events, particularly within social media's echo chamber (Bunker et al., 2019). Misinformation has been around for millennia, but it is more urgent in the age of the internet. The misinformation outbreaks, or infodemiology (Eysenbach, 2002), occurred and spread on the World Wide Web itself. However, medical or health-related misinformation on the internet has inevitable impacts on individuals and social cognition (Impicciatore et al., 1997). Subsequently, many researchers started analyzing the quality of information on different topics and in several fields.

With the outbreak of a novel coronavirus in late 2019, the following few months have witnessed some of the most fast-moving developments of our outer lifetime, with few ends in sight. "We're not just fighting an epidemic; we're fighting an infodemic" (WHO, 2020). An infodemic is an excessive amount of information about a problem that makes it difficult to identify a solution (Zarocostas, 2020). During a health emergency, an infodemic can drown out reliable information, allow rumors to spread more easily, and impede an effective public health response (Obiala et al., 2022). The COVID-19 epidemic has been accompanied by a flow of untrusted information. False and fake news about the virus could spread even faster than facts at a time when reliable information is vital for public health. Since the virus outbreak, researchers have been working to understand how information disorders emerge and spread.

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Any non-verified information that is spread without the intention of changing the world or expecting outcomes is misinformation. A misleading piece of information that is purposefully disseminated with or without deceiving aims is ‘disinformation’; information that is reality-based yet inflicts harm on individuals, communities, and/or institutions is ‘mal-information’ (Tilbury, 2017; Wardle, 2017; Wardle, Derakhshan, 2018). Social media platforms are diluted with many forms of infodemic (spam, rumors, malicious news, etc.). They are hardly controlled and monitored; every user is free anonymously or non-anonymously to disseminate information. For that reason, political and academic considerations neglect social media as an untrusted space.

The Algerian context has not been widely studied with the aim of checking infodemic rates and effects. Yet, there are some studies that highlight how misinformation can negatively affect public opinion (Djaballah, Meribai, 2021; Lahmar, 2020; Rahmouni, 2021). Starting in April 2020, the Algerian authorities launched a campaign against what they described as fake news promoters on social media platforms, which quickly escalated with the emergence of the coronavirus in the country (Gibril, 2020). Further, the Algerian Ministry of Information blocked three news websites in April 2020, which are Interlignes, Maghreb Emergent, and Radiom, and criminalized them for sharing fake news (Committee to Protect Journalists, 2020). The Algerian Press Service (2020) then announced the legal amendment regarding the criminalization of the dissemination of fake news.

Identifying and scrutinizing fake news helps understand the incentives behind sharing it. At the level of language, less attention was drawn to how content features and linguistic devices were implemented for the purpose of manipulating or fabricating information. For this reason, the present research attempts to investigate how Algerian Facebook users disseminate information about the COVID-19 pandemic and to reveal the extent to which the contents contributed to the verification of their accuracy.

2. Materials and methods

In this section, pre-analysis steps are described. Texts collected for the study are all public posts (accessible to non-logged-in users or non-group members). The researcher also searched for images and then converted them into texts for data treatment. Even video captions or descriptions were considered. All considered posts were posted in the period from March 2020 until December 2021 by Algerian Facebook pages (representing brands and famous figures), groups’ members (venues for public conversation), and personal accounts.

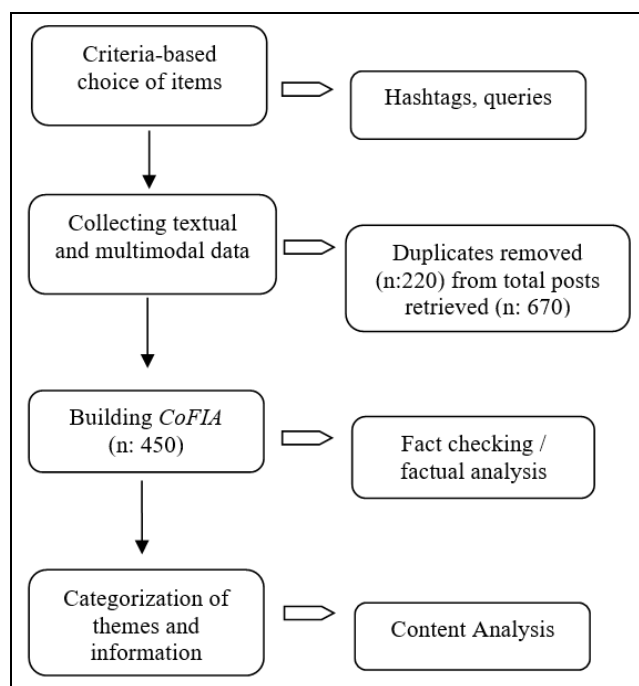


Fig. 1. Flow diagram of research procedure

It was critically important to select information that seemed to lack validity and accuracy. Some posts share partially or fully the same content. For that, a filtration process took place before creating the Corpus of Facebook Infodemic in Algeria (CoFIA).

As the data collection process is shown in [Figure 1](#), CoFIA is compiled from a total of 450 Facebook posts. The researcher follows certain steps throughout the analysis. First, online fact-checking is conducted by verifying the information's validity and accuracy with the four fact-checkers: *Google Checker*, *Misbar*, *Fatabayyano*, and *the Algerian Press Service*. These trusted platforms provide sources for facts and, in most cases, explain the reasons behind the dissemination of information. Yet, through critical reading of posts, the study provides extra explanations from the Algerian context.

Second, factual analysis is conducted after checking the fact source and the relevant infodemic instance in the corpus. Based on the model of Wardle ([Wardle, 2017](#)), the major degrees of harm pertaining to the information type are identified as false, misleading, manipulated, fabricated, and harmful (see [Figure 2](#)). The corpus items are labeled with degrees and types in the course of fact-checking. In this step, it is necessary to check the actor (the one who posted), the actor type (individual, organization, TV channel, etc.), the intended audience, intent to mislead or harm, accuracy, and actions taken (reactions, comments, shares).

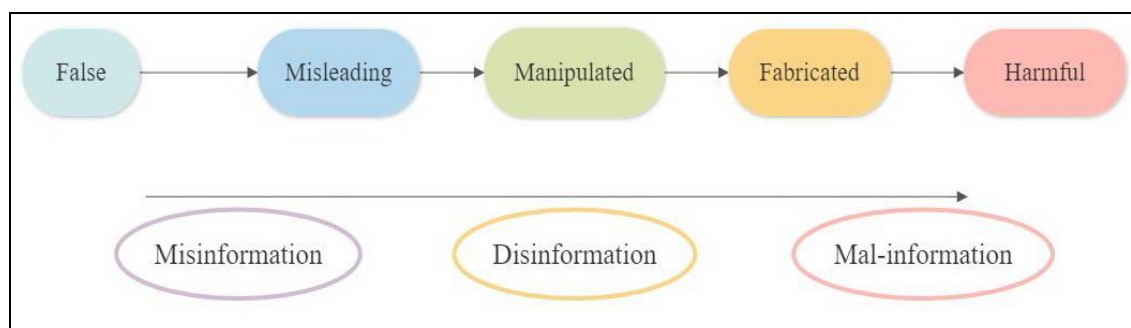


Fig. 2. Rating information in relation to their types

Finally, after checking the frequency of mis-, dis-, and mal- information in CoFIA, the linguistic features of posts are qualitatively analyzed in order to confirm the intention of misleading or harming. The focus is on the repetition of certain expressions, the use of adjectives, neologized lexicons, metaphors, implicature, and other stylistic features that contribute to the quality of the information shared.

3. Discussion

The items in CoFIA have been categorized according to their themes, type of information, date of posting, and quality of rating. The major themes of the posts are self-diagnostics and home remedies. Both are ways of recommending certain solutions or physio-natural practices. Such information themes are commonly not attributed to experts or doctors. For that reason, medical treatment content represented a lower rate. Indeed, the risks increase when the misinformation is shared by doctors; thus, even if the rate of such theme is low, the impact is still remarkable. Similarly, journalists, speakers of government health centers, and news agencies' official pages also affect public awareness, despite the quantity of relevant posts attributed to them.

Table 1. Content categorization of *CoFIA* items

| Theme | Freq. | % |
|---------------------|-------|-------|
| Self-diagnostics | 91 | 20.22 |
| Home remedies | 87 | 19.33 |
| Disease symptoms | 82 | 18.22 |
| Disease effects | 79 | 17.55 |
| Medical treatments | 71 | 15.77 |
| Government response | 40 | 8.88 |
| Total | 450 | 100 |

The major infodemic themes in CoFIA appeared to be self-diagnostics and home remedies; the former are mostly not by expertise (Abbas et al., 2021; Ding et al., 2021) and the latter are inappropriately addressed (Chou et al., 2018). However, Algerian Facebook users seemed less likely to share inaccurate claims regarding governmental responses. Even being politically engaged did not reflect the quality of information shared by a TV channel or official organizations (Valenzuela et al., 2019).

The factual analysis reflects a spate of claims and reposted rumors by individuals and organizations. Some of these posts have been debunked through neutral, official online (Arab and worldwide) fact checkers. As satire is one of the forms of misinformation, the corpus of this study contained some satirical claims that were intended to fool people (Zhang, Ghorbani, 2020). Most of these satirical instances are within disease symptoms, effects, and government responses. Indeed, not only experts in the field but also ordinary people wanted to interpret the ways such a virus might affect their health. Crucially, they all fell for untrusted remedies or cures. Some information was then proven to be less or more harmful accordingly (Bode, Vraga, 2018).

The phases of creating and features of distributing information were identified (see Table 2) in order to determine the level of harm and effect they cause. Posts by individuals were 65.55 %. Although organization-attributed items in CoFIA were numerous, official sources and actors were only 15.55 %. Further, through the discourse presented and discussed in comments and replies, and based on the pragmatic features of posts, 28.22 % of CoFIA items represented posts that showed no intention to mislead. Information that contained hate speech, discrimination, or illusion was considered harmful, and it was 19.77 %. The following table demonstrates with statistics the results of the CoFIA factual analysis.

Table 2. Infodemic features (n, %) in *CoFIA*

| Criteria | Features in Posts | | |
|-------------------|-------------------------------|-------------------------------------|---------------------------------------|
| Actor | Individuals 295 65.55 % | Organizations 155 34.44 % | |
| Actor type | Official 70 15.55 % | Unofficial 380 84.44 % | |
| Intended Audience | Members 136 30.22 % | Social Groups 149 33.11 % | Entire Societies 165 36.66 % |
| Intent to Mislead | Yes 323 71.77 % | No 127 28.22 % | |
| Intent to Harm | Yes 89 19.77 % | No 361 80.22 % | |
| Accuracy | Misleading 141 31.33 % | Manipulated 188 41.77 % | Fabricated 121 26.88 % |
| Action taken | Ignored 123 27.33 % | Shared in support 229 50.88 % | Shared in opposition 98 21.77 % |

After checking the validity and factuality of the posts, three levels of accuracy were counted, and the manipulated types of posts were dominant (41.77 %). The misleading posts were 31.33 %, whereas the fabricated contents were expected to be higher. Its rate can be explained by and connected to the low rates of harm intentions and official actors (Wu et al., 2019). Further,

the public reactions to posts were taken into consideration as they reflect the extent to which people are aware of the truthfulness of the information, channel, and/or actor. Ignoring the disqualified information and opposing them were a sign of awareness beholden regarding the risks of trusting them. (Suarez-Lledo, Alvarez-Galvez, 2021)

Based on fact-checking and factual analysis statistics, the categorization of infodemic instances in CoFIA are demonstrated in Table 3.

Table 3. Information types in *CoFIA*

| Information type | Freq. | % |
|------------------|-------|-------|
| Misinformation | 188 | 41.77 |
| Disinformation | 163 | 36.22 |
| Mal-information | 99 | 22 |
| Total | 450 | 100 |

De- or upgrading the harms or level of illusion and invalidity contributes to identifying the information type (Wardle, Derakhshan, 2018). Mal-information was apparent with a 22 % in CoFIA whereas misinformation occurred with 41.77 %. Throughout the infodemic shared by Algerians on Facebook, language was a noteworthy element that constituted the realities, validity, and integrity of the information. In this respect, the qualitative content analysis of some items in CoFIA will demonstrate how the linguistic features could contribute to the verification of the infodemic and its effect.

The following excerpt demonstrates misinformation from an official source:

“Ivermectin Vaccine: Scientists from Australia discovered a vaccine that destroys coronavirus in 48 hours and stops its spread in the body cells. Dr. Cailey Augustov: “we found that one dose can remove basically all of RNA of the virus.” Now, search is made on determining the human efficacious dose to confirm that the level used in the lab is safe for humans. /Source: *Al Huraa*, the American TV Channel.” (CoFIA, item 4)

The Algerian TV channel *Echorouk* hurried to post misinformation full of content fails. Initially, allusion, which is an indirect reference to a figure, was apparent in the post when the doctor’s name was mentioned. Indeed, when a quote by a doctor—even an imaginary name—is delivered, the post will tend to have much validity. The underlined words in the caption refer to ambiguous or fabricated figures. One must question ‘what scientists? And what lab exactly?’ Again, a contradiction is found in the use of the one-dose effect and the progressive work on an efficacious dose. When it is read in the source language, words like ‘discover’, ‘destroys’ and ‘remove’ are not the best choices.

Moreover, this excerpt demonstrates disinformation from an official source:

“Replying to Pasteur Institute: we received Pasteur institute’s reply with a great sorrow after a long waiting period. We -as the creatives’ organization team- know that it is not within the authority of the #Algerian Pasteur Institute to opine about the efficacy of the vaccine. We just wanted to reveal its pharmaceutical composition in order to start marketing for it. After finishing initial actions, we’ll move to the competent authorities. We re-confirm to all the Algerian people and the whole world, the vaccine discovered by our organization is 100 % efficacious, and it is a medication made by Algerian and Iraqi experts in our organization, and it was not only me who discovered it. / Mr. Loth Bonatero, organization head.” (CoFIA, item 26)

The Algerian researcher Bonatero announced on several occasions that some Algerian and Iraqi experts could develop a medication for the novel coronavirus. In a TV interview, the aforementioned researcher claimed that he was ready to be imprisoned if the vaccine did not work. The facts were screened, yet the information was manipulated by some journalists and Facebook users. Bonatero used certainty in the text in bold. The italicized text denotes the tone of certainty about the efficacy of the vaccine despite the contradictions mentioned. The actor used ‘we’ and ‘them’ to describe a battle of ideologies. The actor also used inclusive language, as in ‘our organization’ and ‘we’ excessively. This could misdirect the audience from the paradox when the aim cited was to show the composition of the medication and the actor insists on its efficacy. From the post, one may notice the hurry that the actor lives in to market the medication without clear

references to names. The paradox of waiting for the institute and claiming to have no opinion was also implicitly posited. The closure of the text reflects how the actor is avoiding responsibility by including himself within a team.

Linguistic features of headlines and body texts can be counted as keys to detect factuality of news (Zhang, Ghorbani, 2020). Based on various linguistic structures and their relative and iterative effects on message deliverance, Table 4 demonstrates the qualitative insights taken from highlighted texts in CoFIA instances.

Table 4. Some linguistic features with effects on information

| <i>Excerpts</i> | <i>Linguistic Features</i> | <i>Effect on information</i> |
|--|---|--|
| Why is the number of Corona deaths large in Algeria? | Question, paradox | Opening the information with a rhetorical question makes the audience concerned about the content. Besides, the paradox is situational because the time of the post was in March 2020, when the case was not highly dangerous. |
| COVID-19 <i>fooled</i> us all | Personification, satire | The actor provides a figurative description to rethink the origins of the virus and let the audience speculate on the purpose of the information. |
| <i>Everyone</i> is talking about Avijan because of its good and <i>very impressive</i> results with <i>no</i> side effects | Hyperbole, judgmental | The public is used as an agent to make it hyperbole. Describing the vaccine |
| The WHO currently confirms that Algeria <i>is out of danger</i> and announces its <i>control</i> over the Coronavirus and expects life to return to Algeria again. | Metaphors, paradox | This was posted in March 2020. It seems that the actor attempts to share hope with false news. The paradox is situational because, at that time, official news claimed a rise in deaths and case tolls. |
| Protective masks today for <i>200 dinars in pharmacies</i> . Fear my Lord, people, it is time for <i>solidarity</i> , not time for <i>quick profit</i> . | Generic phrase, juxtaposition | The actor here notifies the audience of the necessity to call for free masks. Being generic meant that all pharmacies sold them at that price. |
| A <i>dangerous</i> variant named <i>Hehe</i> is expected to kill <i>five million</i> | Evaluative adjective, satire, hyperbole | The variant name was fabricated for fun. The number mentioned was not yet reached by COVID-19. |
| Bonatero says that <i>they did not allow</i> him to try the medication, <i>nor did they allow</i> him save people | Ambiguity, generic phrase | Despite the factuality of what Bonatero claimed on TV, the post included 'they' as unknown agents. It was ambiguous in its generic choice. |

The content analysis revealed that infodemic instances in CoFIA covered and demonstrated several cases of exaggeration, manipulation, fabrication, misleading, and detailed descriptions. Such content features misdirect readers and listeners and contribute to the conventional dissemination of any quality or level of information. Those features are considered the main strategies that can convey misinformation and disinformation through the stylistic and linguistic devices exercised and implemented. Among the major ones explained, we mention generic phrases, evaluative adjectives, and figurative language. Misinformation actors, besides, tended to represent a sort of profanities as the language of marketers might do (Di Domenico et al., 2021).

Algerian sources of infodemic shared on Facebook varied from official to unofficial. Yet, the health information that is conveyed by Algerians on Facebook tends to be oversimplified. Even official sources did not seem professional in delivering the information objectively. Less attention

was paid to the neutral tone, precision, accurate terminology, etc. For that, the language of the fact has the intrinsic power of being free of personal attitudes, figurative aspects, useless repetition, paradox, etc. Yet, the nature of social media users' content absorbed diffusional characteristics that reached low control rates by audience (Allcott et al., 2019; Chou et al., 2020).

Due to the urgent need for saving lives, Facebook adopted new approaches to detect and categorize news according to users, contents and contexts (Iosifidis, Nicoli, 2020). As reviewed by some researchers, the objective of sharing any quality of information is the core motive to cause or avoid harm (Ahmad, Murad, 2020; Wang et al., 2019). The period during the COVID-19 health emergency, when Algerian Facebook users engaged on social media platforms, served as a crucial timeframe and a reference point for examining the patterns of content consumption amidst significant events, particularly at a time when the reliability of information was in question (Cinelli et al., 2019; Vraga, Bode, 2020).

4. Results

During the first few months of the pandemic and the health emergency case, it was difficult to check the factuality of some potentially harmful information. This is due to the novel nature of the virus, the lack of scientific evidence, and the daily-updated suggestions and regulations from official organizations. The challenge to risk communicators is posed by the high uncertainties surrounding the pandemic. Further, clear and accurate information has never been more important than it is in times of health crises. As a coping strategy, people turned to social media to deal with their anxieties that the pandemic and lockdown started to cause.

Algerian Facebook pages, groups, users, and influencers have participated in misleading public health awareness strategies. Thus, they caused an alarming level of digital destruction. The latter, in turn, could be an obstacle in the face of sharing the appropriate situational awareness, enhancing social cohesion, and reaching an effective public response. As a way of portraying Algerian cultural, social, and linguistic features, some neologized words appeared with the coronavirus outbreak. Different structures and word classes of 'Corona' have been used in different dialects to ironically and satirically express information about the pandemic. For instance, '*yetcoran*' as a verb means to catch the coronavirus; '*mcoran*' as an adjective means being affected by the virus. Using such words in posts surely indicates that the shared content is unofficial (Asif et al., 2021).

Facts are not opinions, and for that reason, the majority of actors in CoFIA were making predictions and influencing attitudes. Besides, the linguistic devices evoked the reader's critical thinking, provided information from different angles, and portrayed variant attitudes and judgments. Many of the debunked misinformation could easily be debunked by checking the language. Therefore, the linguistic features of CoFIA content can still be used to check how language shapes attitudes rather than assess the validity of the information. As occurred around the world, some statements, claims, and discussions of various theories related to the origin of SARS-CoV-2 and its malicious goals appeared among Algerians on Facebook. A limited number of CoFIA posts reflected on the conspiracy theory; however, the tendency to seem logical when mentioning past events might convince the audience that the pandemic is a fabricated event.

In previous studies, mal-information consequences tricked people, increasing their anxieties, and providing them with false and ineffective remedies (Freiling et al., 2023). In Algeria, fewer instances of misinformation existed. The mal-information qualities appeared mostly when doctors, presidents, or public figures stood with such ideas to provide a seemingly logical explanation for the crisis. Besides, the infodemic in Algeria has been represented through various types of scams. Facebook users exploited people's fear of the coronavirus and the uncertainty surrounding the pandemic to disseminate unverified information. Some families whose members died because of the virus believed unverified information and reacted violently in hospitals. Some doctors were treated badly for the misconceptions that patients may have had about the disease.

Many researchers in the fields of information management and health policy have reviewed the COVID-19 infodemic, presented some guidance (Király et al., 2020), and proposed different approaches to tackle the issue (Janmohamed et al., 2021). Similar research using other tools like sentiment analysis (Iwendi et al., 2022) may bring new insights into how and why Algerians believed different untrue information about COVID-19. Understanding the reasons why people consume such information easily would help the immunization program and safety protocols be realized in the country.

5. Conclusion

This research project has conducted a factual content analysis of infodemic instances in Algeria. Online fact-checkers have been used to confirm the quality of information shared on Facebook, the most popular social networking site in Algeria. Besides, the linguistic devices employed reflected the level of information's truthfulness and harm. Based on the study corpus criteria, misinformation is revealed as the major type of infodemic disseminated by Algerians on Facebook. The study also found that the integrity of information can be corrupted simply by the way actors deliver it. Through several CoFIA examples, it was proven that linguistic aspects contributed to the logical interpretation of whether the information was factual or not. Figurative language, evaluative adjectives, generic phrases, and other rhetorical devices were the major linguistic features that had been employed.

The COVID-19 infodemic in Algeria has not been effectively addressed through critical and optimal decisions. For that reason, the management of the pandemic period and the loads of information shared by the public, journalism, institutions, and even some governmental bodies have not been seriously considered. The Algerian government should make a difference through departments of security like cyber security and infrastructure security by issuing notices about inauthentic activities or attempts to push misinformation via social media, essentially warning consumers to check their sources when it comes to health care.

Successful crisis management can be supported by raising situational awareness about the risks of misinformation. Besides, much data needs to be annotated for the purpose of evaluating and fighting infodemics. Indeed, machine-processable annotations could help policies of crisis management attain a clearer picture of how institutions and individuals perceive or think about certain information. However, there have always been some limitations due to the dynamic nature of the web and the scalability of such approaches. To be prepared for any future infodemic, the articulated 'semantic web' in the digital era should always be revisited. Furthermore, the improved artificial intelligence tools can help in the detection and categorization of misinformation. The automaticity would support big data processing and qualify as a backup to infodemics' management policies.

Supplementary Data

A sample of CoFIA data is available at <https://osf.io/yzb2a/>

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