Infodemic on Social Media
: An analysis of Egyptians' information behaviors during COVID-19

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ABSTRACT

The purpose of this study is to investigate Egyptians' information behaviors on social media during the 2020 COVID-19 pandemic. The study adopted a survey method approach. The data were collected from a random sample of 225 respondents, focuses on how Egyptians deal with misleading information and fake news. The findings showed that 83.6% of respondents have faced fake news about the COVID-19 pandemic on social media. Besides, their information consumption rates were at a high peak, especially on the Facebook platform. The respondents revealed positive behaviors towards fake news, but their activities average very high, especially from unspecialized people, which may create an Infodemic. The study also investigated the differences in behaviors between the population using Person' Chi-Square test. The findings showed that males have a positive behavior towards the information they share better than females. However, the findings reported that there was a low activity of people working in medical and information sectors, the study considered this more awareness from their side as they know how valuable information is. The value of the study lies in being the first study that provides deep insight into Egyptians' information behaviors on social media during the COVID-19 pandemic.

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KEYWORDS

Infodemic, Misleading information, Fake news, Information-seeking behaviors, Information sharing behaviors.

INTRODUCTION

Information creates our knowledge, which shapes our behavior and decision. If this information doesn't meet the proper person at the exact time from a reliable source, he will misbehave. Recently we faced a tsunami of information (Zarocostas, 2020), which led by the open access and the democratic nature of social media that makes anybody can be easily a news producer (Gavgani, 2020; Alam et al., 2020), but this increase in information doesn't help, it causes background noise, entropy on systems, instead of increasing knowledge (Orso et al., 2020).

This surge of information put World Health Organization under pressure to not just fighting the epidemic itself but also fighting an Infodemic (Nielsen, Fletcher, Newman, Brennen & Howard, 2020), which defined as a rapid spread of all kinds of information concerning a problem makes the solution more difficult (Kulkarni, 2020). Surprisingly this information/disinformation chaos doesn't come from low-educated people, but also leaders, politicians, doctors, ordinary people also participated in this pandemic.

Since COVID-19 appeared, people turned to social media to follow information and news about the virus. "In just 24 hours, there were 19 million mentions of COVID-19 across social media and news sites worldwide" (Molla, 2020; Ahmad, 2020). This Infodemic affected human behaviors increasing antisocial media, xenophobia, public panic, and stigma (Alam et al., 2020). In Sweden, Asian descent was subject to attack, pushed to the bus window by a passenger who asked her if she is Chinese

(Bergsten, 2020). This makes Chinese people start to fight against discrimination by raising signs stating that they are not a virus (Ruffell, 2020). These behaviors affected medical staff also, a nurse from Sinaloa was attacked with chlorine because of her work (CE Noticias Financieras, 2020).

There is a noticeable change in the Egyptian behaviors, as in a widespread footage showed a Chinese man subject to racists, xenophobia in Egypt when someone calls him "corona, corona" (Zarocostas, 2020). Discrimination and violence didn't face Chinese people only but also medical staff, a doctor from Egypt reported that her neighbors harassed, insulted, asking her to leave the house because she works in an isolation hospital (Cinelli, 2020).

PROBLEM STATEMENT AND RESEARCH QUESTIONS

It was noticed that a large amount of misleading information and fake news spread on social media platforms during the current crisis of the COVID-19 pandemic, and this is confirmed by WHO. This phenomenon of Infodemic on social media outbreaks terrifyingly causes panic and confusion among the population (Alam et al., 2020), and this reflects on human behaviors. The dangerousness of Infodemic can compare to the epidemics themselves (WHO, 2020). Therefore, there is a need to analyze this phenomenon in Egypt by figuring out the Egyptian' information behaviors on social media during the COVID-19.

Many studies have analyzed this phenomenon, but they were investigating the ability to identify fake news, or analyzing information-seeking behaviors in different countries. None of these studies has analyzed the Egyptian citizens' usage of Social Media platforms during the current Infodemic. This study aims to

address this gap in the literature, as each country needs its own approach, focusing on its humanitarian nature.

The following research questions were investigated:

RQ1. What are the Egyptians' daily usage average of social media for updating their information and news about COVID-19?

RQ2. To what extent Egyptians trust information and news about COVID-19 on Social Media platforms?

RQ3. What are the Egyptians' Information-seeking behaviors on social media during the COVID-19 pandemic?

RQ4. How did Egyptians deal with misleading information and fake news about COVID-19 on social media?

RQ5. What are the Egyptians' Information sharing Behaviors on social media during the COVID-19 pandemic?

LITERATURE REVIEW

Infodemic creates distrust among people causing confusion, which reflects negatively on public health response (Department of Global Communications, 2020). An earlier study by Nielsen, Fletcher, Newman, Brennen, and Howard (2020) investigated how people access and rate information and news concerning COVID-19 from different sources. The study impeded six countries (UK, USA, Germany, Spain, Argentina, and South Korea). They founded that sources people use to get information about COVID-19 affected by their level former education, age, political viewpoints, as people with the same viewpoint share the same fields of trustworthiness, they found that younger people

rely on newer visualized networks, where teenagers preferred TikTok, olders preferred TV.

Another study by Leeder (2019) reported how American college students evaluate and share "fake news" stories by exposing them to mixed real and fake headline news and stories to evaluate their ability to identify fake news. The participants were asked about their willingness to re-share these stories or headline news, the finding was 62.43% of all identifications were correct, 37.57% were incorrect, and nearly 40% of news stories were incorrectly identified as either real or fake.

Some studies analyzed the phenomenon of Infodemic through content analysis of social media. Carnegie Mellon University researchers (Holmes, 2020) analyzed over 200 million tweets discussing COVID-19 with artificial intelligence to identify bots activity, they found high activity as half accounts including 62% from 1000 were most influential likely to be bots.

Cinelli et al. (2020) analyzed social media platforms (Twitter, Instagram, YouTube, Reddit, and Gab). The study characterized information spreading from questionable sources, finding different volumes of misinformation in each platform. They selected hashtags related to the pandemic based on Google Trends, then downloaded manually all posts and comments based on their meaning, implementing Natural Language Processing techniques and API for Twitter. The dataset was 1,342,103 posts and 7,465,721 comments from 1st January to 14th February 2020 produced by 3,734,815 users. They founded that spreading information-driven by the platform, Twitter is the most neutral, YouTube cuts out unreliable sources 10%, Reddit reduces unreliable source 50%, While Gab amplifies them 400%.

A similar study by Gallotti et al. (2020) focused on Twitter through API, identified a set of hashtags containing the official name of the disease, the name of the city first epidemic outbreaks filtered by API. They analyzed 112.6 with an average of 4.5 million a day in 64 languages worldwide. The study founded that unreliable and low-quality information exposes countries to irrational social behavior with a great risk for public health. They also discovered an extraordinary activity estimated at 40.4% from online messages during this epidemic refers to automated agent "bots".

Leitner (2020) discussed behavioral, social, and economic dynamics related to the COVID-19 pandemic. The researcher analyzed Twitter content specifically disinformation posts on it. He investigated if the tweet contains a factual claim, harmfulness to society, whether it requires verification. The study founded that 60% of English tweets come from the US and India, while 70% of Arabic tweets from Qatar and Saudi Arabia.

Hua & Shaw (2020) reported Infodemic in China within 3 months. They collected and analyzed data from different websites, Chinese social media, and research institutes. The study raised the Supreme Court's early instruction on fake news, which reduced panic and confusion, also highlighted a website called "Rumors exposed website", established by Tencent the parent company of WeChat as an efficient platform to reduce rumors.

Pulido et al. (2020) focused on the Twitter platform and how misinformation circulation on it responding to the current pandemic. The study analyzed 1000 tweets for two days aims to reveal how false and true information is shared. The researchers founded that however false information tweets a lot, but still less than scientific-based tweets or fact-based tweets, also the scientific tweets gain more engagement than tweets based on facts.

METHODOLOGY

The preliminary goal for this study is to analyze the Egyptian' information behavior on social media during COVID-19 Pandemic, depending on an online questionnaire survey. The study focused on (Facebook, Twitter, YouTube, WhatsApp), as these platforms are the most widely used among Egyptians. Data were collected from 14 April to 20 May 2020 with Google Forms, targeted a random sample of the population. The questionnaire was designed to gather basic demographic information (Gender, Age, Qualification, and Career); the second part contained questions about Information-seeking behaviors, sharing behaviors, and how respondents deal with misleading information and fake news on social media platforms. The technique to reach respondents varied from direct contact on social media to Paid Ads on Facebook. A copy of the questionnaire is available in Appendix A.

A total of 225 respondents completed the survey. By gender, respondents were 59.6% Male and 40.4% Female. The age range of respondents was from 15 to 75 years. The majority of the respondents in the sample population are highly educated, (53.3%) were with bachelor's degree, followed by postgraduate (33.8%), then those with Intermediate degree (12.9%). There was diversity in respondents' professionals. The demographics of respondents are shown in Table I.

Table I. Demographic profile of the respondents.

Variables		N	%
Gender	Male	134	59.6
	Female	91	40.4
Age	Less than 20 years	5	2.2

	21 – 30 years	49	21.8
	31 – 40 years	80	35.6
	41 – 50 years	49	21.8
	51 – 60 years	33	14.7
	More than 60 years	9	4
Qualification	Postgraduate	76	33.8
	Bachelor degree	120	53.3
	Intermediate degree	29	12.9
	Uneducated	0	0
Career	Medical Sector	7	3.1
	Academic Sector	49	21.8
	Information Sector	21	9.3
	Employer	101	44.9
	Others	47	20.9

The dataset of this study was analyzed using IBM SPSS Software, Version 25. Pearson' Chi-square test for independence was adopted to determine whether there is a significant difference in behaviors between respondents.

RESULTS

Research question 1
What are the Egyptians' daily usage average of social media for updating their information and news about COVID-19? This RQ was to measure the importance of social media as a source of information in respondents' daily life and extract the most preferred platform for them. Respondents were asked about how

many times they use social media to update their information & news about the COVID-19 pandemic. The results showed that Facebook is the main platform that Egyptians count on it, as 66.2% of respondents use it many times per day, followed by WhatsApp (37.3%), YouTube (18.7%), and Twitter (11.1%). The results also showed that the respondents daily check Facebook, WhatsApp, and YouTube to update their information, while Twitter is considered the lowest platform used, as 34.7% never use it, However, a study by Cinelli et al. reported that Twitter was the most neutral comparing to other platforms concerning reliable news about the virus. That's maybe related to the popularity of each platform in different countries like Snapchat in gulf countries, Facebook in Egypt, and Wechat in China. See Table II.

Table II. Daily average usage of social media

Platform	Many times per day		Once a day		Two times a day		Every three days		Once a week		Never use	
	N	%	N	%	N	%	N	%	N	%	N	%
Facebook	149	66.2	43	19.1	7	3.1	9	4.0	7	3.1	10	4.4
Twitter	25	11.1	22	9.8	15	6.7	74	32.9	11	4.9	78	34.7
YouTube	42	18.7	44	19.6	20	8.9	62	27.6	27	12.0	30	13.3
WhatsApp	84	37.3	44	19.6	14	6.2	41	18.2	12	5.3	30	13.3

In addition to the high usage of social media, the COVID-19 pandemic raised the respondent's daily usage; respondents were asked to specify this impact on a scale from 1 to 5, where 1 indicates the lowest impact, while 5 indicates the highest impact. The results showed that 32.9 % of respondents were highly affected by the pandemic, also 14.7 % were moderate affected, 22.7 % were neutral, while 8.4 % somewhat unaffected, and 21.3 % doesn't affect at all. This result is logical as people in such

health crisis turn to consume more information to protect themselves and their families. See Figure 1.
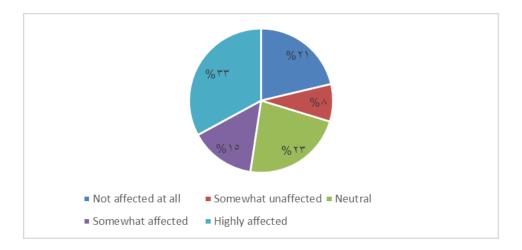

Figure 1. Scale of COVID-19 impact on respondents' social media daily usage

Research question 2

To what extent Egyptians trust information and news about COVID-19 on social media platforms? This RQ was to investigate the respondents' trustworthiness average towards social media platforms to obtain information and news concerning the COVID-19 pandemic. The results showed that 4.41% of respondents absolutely trust in social media, 47.60% somewhat trust, 39.11 neutral, while 8.88% don't trust at all. This result that indicates the high trustworthiness level in information shared on social media maybe cause an information chaos which may causes an Infodemic itself. See Figure 2.

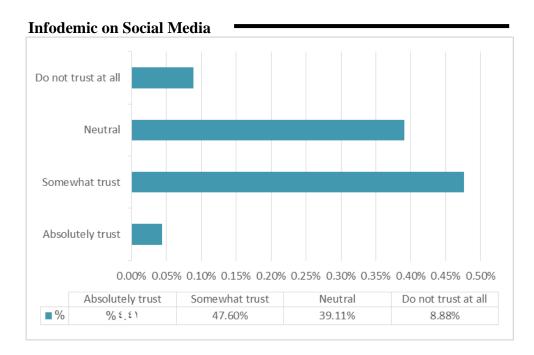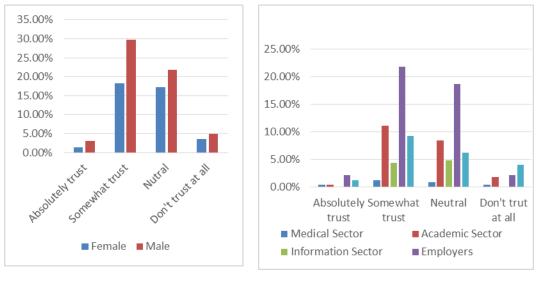|	Absolutely trust	Somewhat trust	Neutral	Do not trust at all
■ %	% ٤.٤١	47.60%	39.11%	8.88%

Figure 2. Respondents' trustworthiness average of social media

The study investigated the statistical differences between demographic variables and respondents' trustworthiness of social media. By gender, males were more trust in social media than females. By career, people in the medical sector have the lowest level of trustworthiness of social media, followed by people in the information sector, that's maybe that they have more reliable sources to depend on it, like scientific journals. Employers were the highest category trusting social media platforms. See Figure 3, 4.

Figure 3. Differences on trustworthiness by gender

Figure 4. Differences on trustworthiness by Career

Research question 3

What are the Egyptians' Information-seeking Behaviors on social media during the COVID-19 pandemic? This RQ was to analyze respondents' seeking behaviors. First, respondents were asked about the sources of information and news they depend on it. The results showed that the majority depends on governmental sites (83.60%), followed by doctor's pages (32%). It's been noticed that they depend on international newspapers (28.90%) and friends' posts (24.90%) more than local newspapers (20.40%). The results also reflect the widening use of Facebook more than WhatsApp and Twitter. This could be linked to the popularity of Facebook in Egypt. See Figure 5.

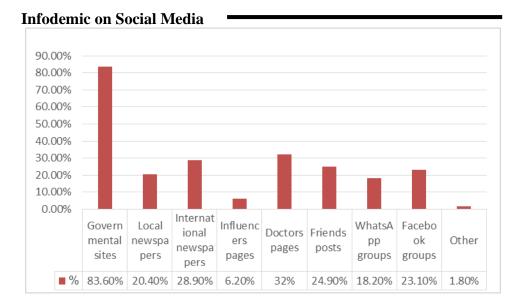|	Govern mental sites	Local newspa pers	Internat ional newspa pers	Influenc ers pages	Doctors pages	Friends posts	WhatsA pp groups	Facebo ok groups	Other
■ %	83.60%	20.40%	28.90%	6.20%	32%	24.90%	18.20%	23.10%	1.80%

Figure 5. Respondents' sources of info & news on social media

To determine their trustworthiness of these sources, they were asked to rate their level of trust. The results showed that the international organizations' pages were the most trusted sources of information on social media (Absolutely trust = 48.9 %), followed by specialized doctors (Absolutely trust = 33.3%), then the governmental sites (Absolutely trust = 31.6). On the other hand, the influencers' pages were the most untrusted source of information (Do not trust at all = 48.4%). Also, it is noticeable that the respondents don't trust unspecialized doctors (Do not trust at all = 40.0%), which may reflect participant's awareness. See Table III.

Table III. Trust level on info & news on social media

Sources	Level of trust							
	Absolutely trust		Somewhat		Neutral		Do not trust at all	
	N	%	N	%	N	%	N	%
Governmental sites	71	31.6	112	49.8	31	13.8	11	4.9
International organizations pages	110	48.9	88	39.1	25	11.1	2	0.9
Local newspapers	14	6.2	81	36.0	91	40.4	39	17.3
International newspapers	53	23.6	95	42.2	66	29.3	11	4.9
Influencers pages	30	13.3	86	38.2	0	0	109	48.4
Friends posts	3	1.3	67	29.8	100	44.4	55	24.4
WhatsApp groups	5	2.2	55	24.4	97	43.1	68	30.2
Facebook groups	4	1.8	61	27.1	98	43.6	62	27.6
Specialized doctor	75	33.3	93	41.3	47	20.9	10	4.4
Unspecialized doctor	5	2.2	43	19.1	87	38.7	90	40.0

To measure their awareness about the information they consume, they were asked about how often they open the citation link of information and news they obtain. The results showed that 61.3% always open the citation link, 32.9% sometimes open it, while 5.8% don't care. That reveals a good indicator if they were telling the truth and not pretending. See Figure 6.
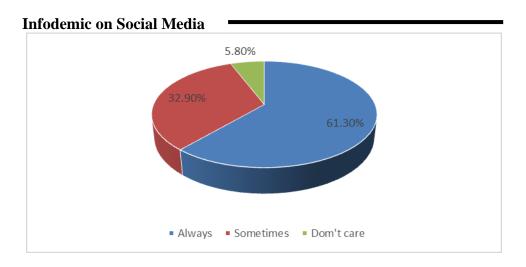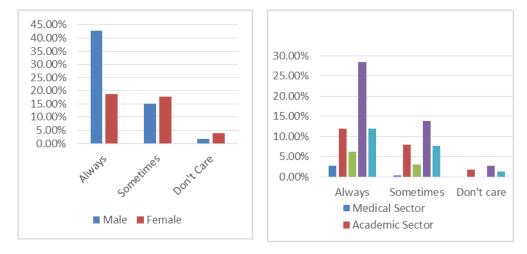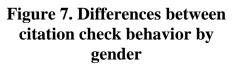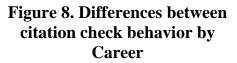
Figure 6. Caring of opening the citation link

To reveal if there were a behavior similarity about content consumption, the study checked the correlation between the behavior of citation check and demographic variables. By gender, males were more interested in checking the citation links than females. This explains the trustworthiness of social media that men showed. By Career, Employers were more interested in opening the citation; however, people in medical and information sectors were less interested. That's maybe because they don't have sufficient time to investigate social media sources and maybe the social media aren't the main source for them. See Figure 7,8.

Figure 7. Differences between citation check behavior by gender

Figure 8. Differences between citation check behavior by Career

Research question 4

How do Egyptians deal with misleading information and fake news about COVID-19 on social media? This RQ was to forge a comprehensive view towards misleading information and fake news about COVID-19 on social media, four questions were imbedded into this section, investigating misinformation & fake news volume, its sources, and respondents' behaviors of dealing with it. The results showed that the majority of respondents have faced fake news about the virus on social media with a percentage of 83.6 %, while 16.4 % didn't face it. The respondents were asked also to determine the sources of this information. Influencers' pages (68.9%) and anonymous posts (66.2%) were the biggest sources spreading fake news during this pandemic, however, international newspapers (5.3%), and governmental pages (9.3%), friends' posts (0%) were the lowest sources, from the respondents' perspective. That's because influencers usually seeking for high traffic, regardless of the

accuracy of the information they share, while the governmental pages and newspapers keens on the accuracy of information instead. See Figure 9.

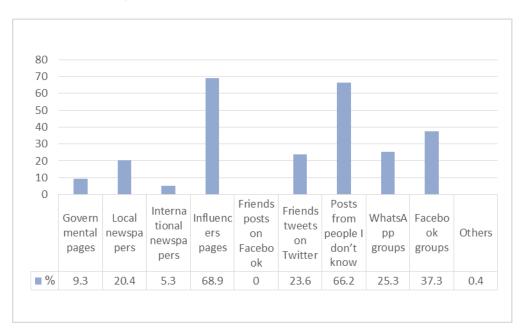| %	Govern mental pages	Local newspa pers	Interna tional newspa pers	Influenc ers pages	Friends posts on Facebo ok	Friends tweets on Twitter	Posts from people I don't know	WhatsA pp groups	Facebo ok groups	Others
%	9.3	20.4	5.3	68.9	0	23.6	66.2	25.3	37.3	0.4

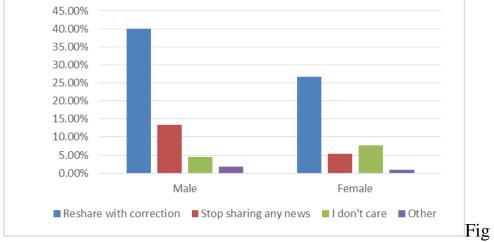**Figure 9. Sources of fake news on social media**

The Infodemic phenomenon generates from the circulation of misleading information and fake news, so the study examined the respondents' behaviors in two different situations they probably face. At first, the study investigated their action towards fake news shared by themselves. The results revealed that 66.7% would re-share it with correction, 18.7% will stop sharing any news in the future, 12% will leave the information without correction, as they don't care, 2.7% reported that they will delete the information without referring to it.

This indicates that 33.3% (one-third of the information volume) of the fake news & misinformation shared by participants is left without correction or hint, which could be received by others as

facts, and this could ignite Infodemic itself. See table IV. The findings also reported that males had a more positive attitude than females concerning this behavior. See Figure 10.

Table IV. Respondents behavior towards fake news they shared

What's your action if you discovered that you shared any fake news on social media?	N	%
Re-share it with correction	150	66.7
Stop sharing any news	42	18.7
I do not care	27	12.0
Other	6	2.7

Figure 10. Gender behavior towards fake news they shared

The study investigated respondents' behavior towards fake news shared by others. The results revealed that 56.9% are caring about correcting fake news without citation, while 16.9% are caring about correcting with citation, 25.8% doesn't care at all,

and one respondent (0.4%) reported that he doesn't care about correcting information to avoid being bullied from others and that may explain the behavior of people don't care, as sometimes this need the courage to face others with the truth (See Table V.).

The findings reported that males were more caring about correcting fake news shared by others than females. The study also reported an inverse correlation between this behavior and qualification, as whereas the education level increased the caring of correcting fake news becomes low. By career, people in the medical sector were less caring about correcting fake news shared by others, followed by people in the information sector. This is disappointed to the study as those people are supposed to know the information value in this critical time, so they should give more consideration to correct and make it clearer to the public. Turning a blind eye to correct information from specialists exacerbate the phenomenon and turns social media into an information chaos platform.

Table V. Respondents behavior towards fake news shared by others.

What's your action towards fake news shared by others?	N	%
Correct it without citation	38	16.9
Correct it with citation	128	56.9
I do not care	58	25.8
Other	1	.4
Total	**225**	**100.0**

Research question 5

What are the Egyptians' Information sharing behaviors on social media during the COVID-19 pandemic? This RQ was to analyze respondents' information sharing Behavior on social media platforms, so the questionnaire included questions about their sharing average, their purposes of sharing, the kind of

information they usually share, and their behaviors towards some situations. Infodemic originated from the highly spreading of misleading information and fake news, which creates noise in the public background causing conflict and confusion on the recipient, thus the study asked respondents about how many times they share information and news on different social media platforms. The findings showed that 37% of the population sharing at least one post about the virus per day on the Facebook platform, and this average nearly doubled every three days (62.3%), for WhatsApp 31.5% sharing one information per day, and this average also nearly doubled every three days (56.8%) while sharing average on YouTube (Per day 17.4%,) and Twitter (Per day 16.9%) indicated the lowest average per day. This high rate of information sharing concerning this virus reflects the anxiety that pandemic creates in public. See Figure 11.

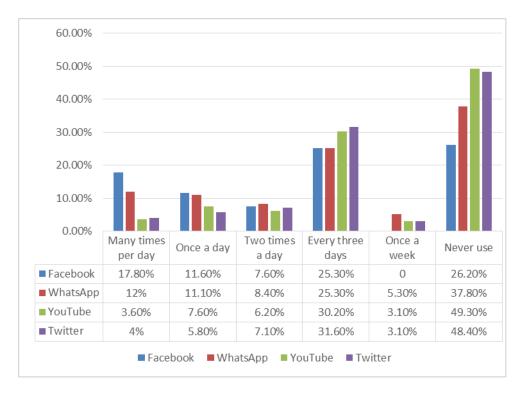|	Many times per day	Once a day	Two times a day	Every three days	Once a week	Never use
Facebook	17.80%	11.60%	7.60%	25.30%	0	26.20%
WhatsApp	12%	11.10%	8.40%	25.30%	5.30%	37.80%
YouTube	3.60%	7.60%	6.20%	30.20%	3.10%	49.30%
Twitter	4%	5.80%	7.10%	31.60%	3.10%	48.40%

Figure 11. Sharing frequencies on social media

To classify the content type of information and news being shared on social media aiming to analyze its reflects on the public, respondents were asked about what they usually share related to COVID-19 on social media. The findings showed that 52% share information and news raising health awareness, 41.3% sharing positive posts raising self-confidence, 30.2% sharing videos of medical experts, 18.7% sharing news about infected people and areas, 11.6% sharing information about medicine & vaccines, 6.7% sharing self-opinions & believes, 0.4% sharing supplications, while 30.7% never shared information about the virus. This statistic reveals that they weren't insisted to mislead others or spreading anxiety but they have a good intention to help themselves and others. But on the contrary, they may cause an Infodemic while trying to help as they weren't specialists with a lack of ability to classify information. See Figure 12.
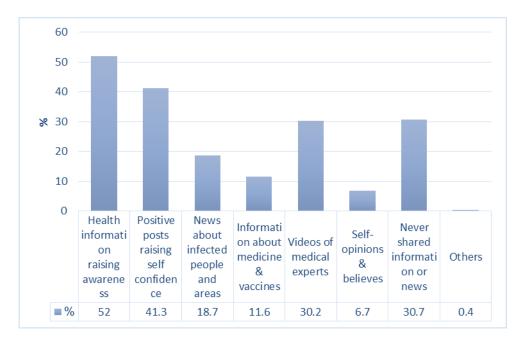

■ %	Health information raising awareness	Positive posts raising self confidence	News about infected people and areas	Information about medicine & vaccines	Videos of medical experts	Self-opinions & believes	Never shared information or news	Others
%	52	41.3	18.7	11.6	30.2	6.7	30.7	0.4

Figure 12. Kind of information & news shared on social media

Participants were asked by a multiple-choice question about their purpose of sharing these posts (See Table VI.), 73.8% of respondents stated that their purpose was raising others awareness, 49.3% For reassurance & self-confidence. On the other side, 3.1% aiming to have more traffic on their pages, and 3.1% seeking entertainment & breaking boredom. However, this reflects the high awareness level from the population, but the study raises its concern for the 6.2% who seeking entertainment and obtaining traffic, as those could have significance if it comes from influencers and may have an impact on public life and their decisions.

Table VI. Purpose of sharing on social media

What's your purpose of sharing info or news about the virus on social media?	N	%
For awareness	166	73.8%
For reassurance & self confidence	111	49.3%
For gaining traffic on my page	7	3.1%
For entertainment & breaking boredom	7	3.1%
Other	2	0.9%

As sharing information and news in such critical crises may cause the circulation of misleading information and fake news, so it's important to check its accuracy before sharing it with others. Respondents were asked about how often they check the accuracy of the information, the findings showed that the majority keen to check the accuracy as 64% always check, 24.4% sometimes check, while only 5.3% doesn't care. See Table VII.

Table VII. The tendency of checking accuracy of information Before sharing.

Checking the accuracy		N	%
Valid	Always	144	64.0
	Sometimes	55	24.4
	Don't care	12	5.3
	Total	211	93.8
Missing	System	14	6.2
Total		225	100.0

The findings showed a statistical correlation between the gender of the population and this behavior, as males (62.1%) were more caring about checking the accuracy of information before sharing with others than females (37.9%). That's consistent with the result of question 3, Figure 7, which showed that males were also more interested in checking the citation links than females. See Figure 13.
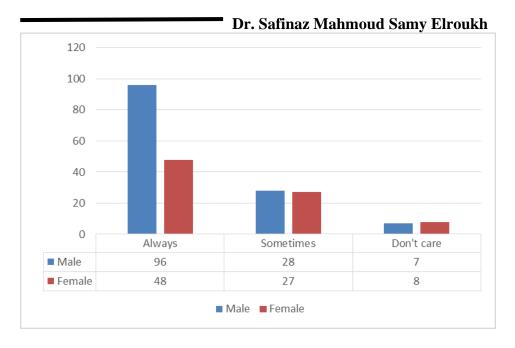
	Always	Sometimes	Don't care
■ Male	96	28	7
■ Female	48	27	8

■ Male ■ Female

Figure 13. The correlation between gender & checking the accuracy

To determine how respondents check the accuracy of shared information, they were asked about their method. The findings showed that 61.2% track the source link, 34.7% refer to search engines, 32% ask medical experts about the information, 10.2% discuss it with family members and friends, 4.9% varied from those who follow their intuition to those who don't share any information on social media so they don't check. The study investigated the correlation between qualification and this behavior, the findings showed that the postgraduates prefer to track the source (48.8%), while people with bachelor degree prefers referring to the search engines (56.4%), who's with intermediate degree prefers referring to search engines (15.4%) and asking experts (13.9%). This scale could be changed if the non-educated people included, as all participants were well educated, so the study highlighted the necessity of conducting a separate study for non-educated people using proper tools. See Figure 14.
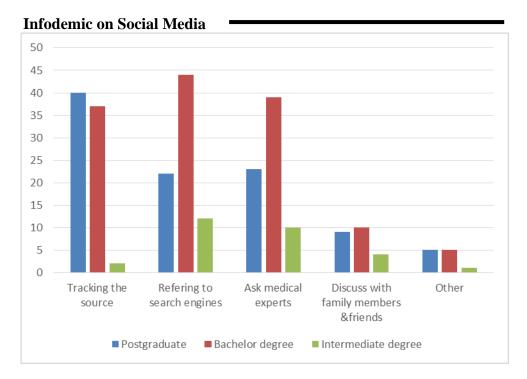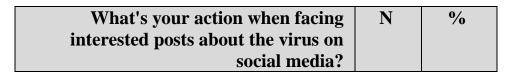
Figure 14. The correlation between gender & method of checking the accuracy

To have a comprehensive view about their sharing behavior another question was designed to test their action when facing interesting posts about the virus on social media. The findings showed that 40% share information after checking its accuracy, 11.1% immediately share it, however, 41.3% read posts without sharing with others, 7.6% uses this information in social discussion, which spread the information outside the social media. See Table VIII.

Table VIII. Respondents' action when facing interested posts on social media.

What's your action when facing interested posts about the virus on social media?	N	%

Immediately share it	25	11.1
First check the accuracy, then share it	90	40.0
Read it without sharing	93	41.3
Discuss with family members & friends	17	7.6

DISCUSSION

The study analyzed Egyptians' Behaviors on social media during the current crisis of the COVID-19 pandemic. To figure out the nature of the Infodemic in Egypt, five main questions were investigated. The findings showed the publicity of the Facebook platform in Egyptians daily life, as 66.2% of respondents uses it daily for updating their information and news, while Twitter was the lowest platform as 34.7% never use it. The current crisis rose the respondents' daily usage as 32.9% stated that their usage was highly affected, this is a normal impact, as the COVID-19 crisis was sudden and cloudy, though people usually need to follow new news seeking tranquility. The results showed that social media platforms have a moderate trustworthiness average of 40% percent. Males trust social media sources more than females do. By career, the medical sector people were the lowest category trusting social media, followed by people in the information sector, that's maybe for they have more reliable sources to depend on it, like scientific journals.

The study analyzed also Egyptians' seeking behaviors on social media, the results showed that 83.6% obtaining their information from governmental sites, followed by doctors' posts. The study founded that the trustworthiness in international newspapers and friends' posts was higher than local newspapers, as only 20.4% of the population trust in it. Also, it is noticeable that 40% don't trust unspecialized doctors, which reflects Egyptians awareness. Concerning checking the source of information, the findings

showed that 61.3% always open the citation link, however, 5.8% don't care. Males were more caring about opening the citation link than females do, and the employers were the most caring, while people in the medical sector were the lowest, that's maybe because they don't have sufficient time to investigate social media sources and maybe the social media aren't the main source for them.

The study also investigated how Egyptians deal with misleading information and fake news on social media, the majority reported that they have faced fake news on social media with 83.6 percent. The fakest news respondents have faced came from influencers' pages and anonymous people. Thus maybe because of influencers seeking to gain traffic on their pages regardless of the facts they share (Pulido, 2020), as facts are vital, but not interesting (Finneran-Gingras, Matthews, 2020). The anonymous people probably indicate bots highly activity on social media, which is spotted by some studies investigating other countries (Gallotti et al., 2020; Holmes, 2020). It was sudden that some respondents faced fake news from governmental pages and international newspapers, that's maybe resulted from the early studies published on these sources concerning a specific treatment for the virus, later it was proved its ineffectiveness, that's maybe led the public to consider this information as fake news.

The study also analyzed Egyptians' sharing behaviors on social media. 37% of respondents sharing at least one post about the virus on Facebook per day, and this average doubled every three days, and 31.5% sharing one post per day on WhatsApp, that's also doubled every three days. Their purposes of sharing this information were raising public health awareness and spreading reassurance & self-confidence.

The study reported a positive behavior towards shared disinformation if discovered, as 66.7% will re-share it with correction, and 56.9% will correct the misleading information shared by others with its citation, while some respondents don't take action to avoid being bullied by others. The study revealed that males were more caring about correcting fake news they shared before more than females do. However, the possessiveness showed, but this high average of sharing information may cause a background noise to the public (Orso, Federici, Copetti, Vetrugno & Bove, 2020).

The study founded that 50.3% of respondents always checking the accuracy of information and news. There was a correlation between gender and checking the accuracy of information behavior, as males were more caring than females. There was a diversity in their methods of checking the accuracy of information.

The results of this study provide a deep vision of Egyptians behavior on social media, this may lead to understanding the dynamics of COVID-19 Infodemic for effective decision-making. Future initiatives should include how this Infodemic being fought, also there is a need to analyze uneducated behaviors on the ground.

This study has two limitations. Respondents in this study may have been sensitized by the survey questions to express their actual behaviors transparently, but there is a possibility that some of them answering inaccurately, as some people face problems revealing their bad behaviors. Another limitation that this study has faced difficulty convincing people with low-level education to engage them with the survey, this maybe due to the survey method not suitable for them, as it's strange to their culture.

CONCLUSION

This study provided an insightful vision towards Egyptians behaviors on social media in a try to explain how the Infodemic phenomenon outbreaks in Egypt. The results reported that 83.6% of respondents have faced fake news about the COVID-19 pandemic on social media. The respondents revealed positive behaviors towards these fake news, as they were keen about checking the information accuracy and correcting misleading information and fake news before sharing it with others. However, these positive behaviors reflect their high awareness, but still their activity average on social media very high, which may create Infodemic, as this information comes from unspecialized people. The study highlighted that respondents' information consumption and sharing were at their high peak, especially on the Facebook platform. The study also investigated the differences in behaviors between the population using the Person' Chi-Square test. The findings showed that males have a positive behavior towards the information they share better than females. However, the findings reported that there was a low activity of people working in medical and information sectors, the study considered this more awareness from their side as they know how valuable information is.

Appendix A. Questionnaire survey

A questionnaire survey monitoring Egyptians' Information behaviors during COVID-19

There is a great spreading of misleading information and fake news on Social Media during the COVID-19 pandemic, which identified by WHO as "Infodemic". This survey aims to reveal Egyptians' Information-seeking and sharing behaviors concerning information & news about the virus.

Dr. Safinaz Mahmoud Samy Elroukh

Thanks in advance for your precious time answering this survey, which will take approximately 5 minutes only. Please fill all questions transparently and accurately which reflects your actual behavior, thus we can extract realistic results; this will reflect positively in our society.

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1.   **Demographic Data**

Q1 Gender

- o   Male
- o   Female

Q2 Age

- o Less than 20 years
- o 21 – 30 years
- o 31 – 40 years
- o 41 – 50 years
- o 51 – 60 years
- o More than 60 years

Q3 Qualification

- o Postgraduate
- o Bachelor degree
- o Intermediate degree
- o Uneducated

Q4 Career

- o Medical Sector
- o Academic Sector
- o Information Sector
- o Employer
- o Others

2.   **Sources of information & news about the virus**

Q5 How many times do you use the following platforms for obtaining information & news about COVID-19 Virus?

	Many times per day	Once a day	Two times a day	Every three days	Once a week	Never use
Facebook	○	○	○	○	○	○
Twitter	○	○	○	○	○	○
YouTube	○	○	○	○	○	○
WhatsApp	○	○	○	○	○	○

(Q6) Specify to what extent COVID-19 epidemic has raised your usage of social media platforms?

(Value 1 indicates the lowest impact, while 5 indicates the highest impact)

1	2	3	4	5
○	○	○	○	○

(Q7) Where do you get information & news about COVID-19 virus on Social Media?

(You can select multiple choices)

- ○ Governmental sites
- ○ Local newspapers
- ○ International newspapers
- ○ Influencers pages
- ○ Doctors pages
- ○ Friends posts
- ○ WhatsApp groups
- ○ Facebook groups
- ○   Other

(Q8) To what extent do you trust on information & news on Social Media?

- ○ Absolutely trust
- ○ Somewhat trust
- ○ Neutral
- ○ Do not trust at all

(Q9) Select the important pages you follow to update your news on Social Media?

- ○ Page of WHO
- ○ Page of the Egyptian Ministry of Health
- ○ Pages of specialized doctors
- ○ Influencers pages
- ○ Pages fighting fake news and rumors
- ○ Others

(Q10) Specify your trust level on information & news you get from the following sources.

	Absolutely trust	Somewhat trust	Neutral	Do not trust at all
Governmental pages	○	○	○	○
International organizations pages	○	○	○	○
Local newspapers	○	○	○	○
International newspapers	○	○	○	○
Friends posts	○	○	○	○
Influencers pages	○	○	○	○
Facebook groups	○	○	○	○
WhatsApp groups	○	○	○	○
Specialized doctor	○	○	○	○

Unspecialized doctor	○	○	○	○
Others	○	○	○	○

3. Misinformation circulation Behavior

(Q11) Have you faced any fake news or misleading information on social media concerning to COVID-19 virus?

- o Yes
- o No

(Q12) What's your action if you discovered that you shared any Fake News?

- o Re-share it with correction
- o Stop sharing any news
- o I do not care
- o Other

(Q13) What's your action towards Fake News & misleading information shared by others?

- o Correct it with citation
- o Correct it without citation
- o I do not care
- o Other

(Q14) Determine sources of Fake News & misleading information you faced?

(You can select multiple choices)

- o Governmental pages
- o Local newspapers
- o International newspapers
- o Influencers pages
- o Friends posts on Facebook

-                              Friends tweets on Twitter
-                              Posts from people I don't know
- WhatsApp groups
- Facebook groups
-                              Others

4. Information sharing Behavior

(Q15) How many times do you share information & news about the virus on the bellow platforms?

	Many times per day	Once a day	Two times a day	Every three days	Once a week	Never use
Facebook	○	○	○	○	○	○
Twitter	○	○	○	○	○	○
YouTube	○	○	○	○	○	○
WhatsApp	○	○	○	○	○	○

(Q16) What kind of information or news do you share on Social Media?

      (You can select multiple choices)

- Health information raising awareness
- Positive posts raising self confidence
- News about infected people and areas
- Information about medicine & vaccines
- Videos of medical experts
- Self-opinions & believes
- Never shared information or news
-      Other

(Q17) What's your purpose of sharing information or news about the virus on Social Media?

- For awareness
- For reassurance & self confidence
- For gaining traffic on my page
- For entertainment & breaking boredom

o Other

(Q18) How often do you check the accuracy of information you post before sharing it with others?

o Always
o Sometimes
o Don't care

(Q19) How do you check the accuracy of information before sharing?

o Tracking the source
o Referring to search engines
o Ask medical experts
o Discuss with family members & friends
o Other

(Q20) How often Do you care about opening the citation link of information & news on social media?

o Always
o Sometimes
o Don't care

(Q21) What's your action when facing interested posts about the virus on social media?

o Immediately share it
o First check the accuracy, then share it
o Read it without sharing
o Discuss with family members & friends
o Other

(Q22) Write your suggestions to fight the phenomenon of Infodemic on social media.

…………………………………………………………………………………………
……………………………………………………

Dr. Safinaz Mahmoud Samy Elroukh

Thanks for your quick response, appreciating your valued time answering this survey. If you have any comments or suggestions, please don't hesitate to contact me via email.

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Dr. Safinaz Mahmoud Samy Elroukh

الوباء المعلوماتي على شبكات التواصل الاجتماعي
: دراسة تحليلية لسلوكيات المصريين في تداول المعلومات أثناء جائحة كورونا

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مستخلص:

هدفت الدراسة إلى الكشف عن سلوكيات الشعب المصري في البحث عن المعلومات ومشاركتها على شبكات التواصل الاجتماعي أثناء جائحة فيروس كورونا. وقد اعتمدت الدراسة على المنهج الوصفي التحليلي، وبصفة خاصة على استبانة الكترونية تم الاجابة عليها من قبل عينة عشوائية مكونة من عدد ٢٢٥ من المجيبين، وقد ركزت الدراسة على تحليل سلوكيات المصريين في التعامل مع المعلومات والأخبار المضللة أو المزيفة. وتوصلت الدراسة إلى أن ٨٣.٦٪ من العينة قد واجهوا بالفعل معلومات خاطئة أو مضللة عن الفيروس على شبكات التواصل الاجتماعي، بالإضافة إلى ذلك، فقد كانت معدلات استهلاكهم للمعلومات في ذروتها، خاصةً على الفيسبوك. وعلى الرغم من أن أغلب المجيبين قد أظهروا سلوكيات ايجابية في تداولهم للمعلومات، ولكن معدلات نشرهم للمعلومات مرتفع جداً، خاصةً من أشخاص غير متخصصين، مما قد يخلق بدوره وباءً معلوماتياً. وقد حاولت الدراسة أيضاً رصد الاختلافات في سلوكيات العينة من خلال استخدام اختبار بيرسون الإحصائي، وقد أظهرت النتائج أن الذكور لديهم سلوك ايجابي تجاه المعلومات التي يشاركونها بشكل أفضل من الإناث. كما أوضحت النتائج أن العاملين في القطاعين الطبي والمعلوماتي هما أقل الفئات مشاركةً للمعلومات المتعلقة بالفيروس على شبكات التواصل الاجتماعي. وتأتي أهمية الدراسة الحالية من كونها من أولى الدراسات التي تقدم تحليلاً متعمقاً لسلوكيات المصريين في تداول المعلومات على شبكات التواصل الاجتماعي أثناء جائحة فيروس كورونا.