جامعة الفيوم
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THE ROLE OF SOCIAL MEDIA IN MEDICINE

We talk about the great role of social media for eliminating disease the effective role of data science in medicine especially, it's role in eliminating Covid-19.

Name of subject: social networking &digital marketing.

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Introduction

This study focuses on how educating people through social media platforms can help reduce the mental health consequences of the COVID-19 to manage the global health crisis. The pandemic has posed a global mental health crisis, and correct information is indispensable to dispel uncertainty, fear, and mental stress to unify global communities in collective combat against COVID-19 disease worldwide. Mounting studies specified that manifestly endless coronavirus-related newsfeeds and death numbers increased the risk of global mental health issues. Social media provided positive and negative data, and the COVID-19 has resulted in a worldwide info demic. It has eroded public trust and impeded virus restraint, which outlived the coronavirus pandemic itself.

The extent to which social media platforms contribute to enhancing public health awareness and prevention during epidemic disease transmission is currently unknown. Doubtlessly, coronavirus disease (COVID-19) represents a great challenge at the global level, aggressively affecting large cities and public gatherings and thereby having substantial impacts on many health care systems worldwide because of its rapid spread. Each country has its capacity and reacts according to its perception of threat, economy, health care policy, and the health care system structure. Furthermore, we noted a lack of research focusing on the role of social media campaigns in public health awareness and public protection against the COVID-19 pandemic in world.

Using data science in hospitals the responsibilities of a Data Scientist in healthcare are as follows:

1- Collecting data from patients. 2- Structuring and sorting the data for use. 3-Performing Data Analytics using various tools. 4- Implementing algorithms on the data to extract insights. 5- Building predictive models with the development team. 6- To ease the workflow of the healthcare system. 7- To reduce the risk of treatment failure. 8- It helps in efficiently utilizing doctors and other resources for the benefit of the maximum number of patients. 9-It predicts the future medical crises of a patient.

Covid-19 in data science applications

1-Predicting COVID-19 Trends and Hotspots

Determining where the next surge in coronavirus cases could happen is critical for governments and public health practitioners. For example, to get a real-time picture of how the virus is moving around the world, Johnson & Johnson built a global surveillance dashboard. Pulling in data at a country, state, and county level guided where they evaluated their investigational COVID-19 vaccine candidate.

2-Reducing Risk

Data also helps identify those most at risk, including what might make someone more prone to severe illness and how different treatment courses may affect patient outcomes. For example, machine learning has enabled us to accurately categorize, or predict, who is likely to be immune from COVID-19 and who is in the 20% at-risk group. Those predictions allowed health authorities to focus their efforts and increase the efficacy of public health interventions and policies.

3-Remote patient monitoring

is one of important application to dealing with covid-19 patient. The pandemic spotlighted the value of remote patient monitoring like never before. But tele healthcare is here to stay, as on-demand services become the norm across the breadth of industries. There are multiple benefits to enabling remote patient monitoring using IoT, in the form of wearable tech, and data science.

4-Disease tracking and prevention(covid-19)

Another compelling use case for data science in healthcare, highlighted, again, by the pandemic, is the ability of data to help medical bodies track and prevent disease. Particularly in the field of infectious diseases data science is helping medical analysts understand how pathogens spread by surveilling outbreaks in real time and using the gathered data to create a forecast for future spread.

Forecast metrics include daily/weekly/monthly case counts, peak timing, peak number, outbreak duration and magnitude. Data can then be broken down into geographical regions to predict spread by area.

Furthermore, where outbreak data used to be confined to what could be gathered from healthcare providers, data scientists can now look to other touchpoints to help them track and predict spread. These include social media and search engine enquiries, environmental data, clinical surveillance.

An overview of COVID-19 and its risks

Infection with coronavirus disease (COVID-19) has become a severe public health issue worldwide. COVID-19 can be characterized as a pandemic. Therefore, it is of utmost importance to prevent further spread of the pandemic in public and health care settings. Scholars have reported that evidence of the impact of social media on health knowledge, behavior, and outcomes show that these tools can be effective in meeting individual and population health needs. Most research addresses specific interventions and approaches, which vary widely in many things. Due to this wide variation, it is difficult to discover what works and how, General strategies and guidelines include social distancing, evaluating every suspected case, staying home, avoiding social gatherings, treating patients, and contact tracing. However, some countries are taking stricter measures to contain the pandemic, such as lockdowns and mass testing.

-The Public awareness and prevention of COVID-19 infection play important roles in disease control; a lack of reasonable knowledge of infectious diseases leads to low detection rates. Therefore, to stop the spread of COVID-19 infection in Egypt, the Egyptian Ministry of Health launched specific national disease control measures, using several media campaigns, posters, and advertisements on television and printed media along with other methods to improve the awareness of this pandemic among the general population. The assessment of government websites and social media platforms for public awareness is important because it helps determine the impact of governmental prevention efforts and measures and gauges the need for intervention.

-Public awareness of infectious diseases leads to behavioral changes among the public, thereby representing partial treatment; notably, this awareness reduces the pressure and economic burden on medical facilities. To raise public awareness, social media platforms are effective tools that contribute to the real-

time dissemination of information about the status of the disease and give appropriate advice to the public on how to avoid being infected. Further, social media platforms provide beneficial climate and socioeconomic data. Additionally, social media platforms have been shown to represent an essential source of communication that enables the creation and dissemination of information to people through the internet. It is worth mentioning here that social media platforms allow groups and individuals to exchange information about all subjects and issues, including members of minority groups or people who have no opportunity to express their opinions using other information sources. Researchers have argued that information and perspectives pertinent to issues associated with human health are revealed by informally using social media platforms away from official medical and health departments.

Evidence about social media's impact on health knowledge, behavior and outcomes shows that these tools can be effective in meeting individual and population health needs.

Therefore, in this study, we attempt to answer the following questions:

Does the use of social media platforms raise public health awareness of COVID-19 as a pandemic disease?

Does the use of social media platforms increase public behavioral changes toward COVID-19 as a pandemic disease?

Does the use of social media platforms increase public protection against COVID-19 as a pandemic disease?

Do public health awareness and behavioral changes play important roles in enhancing the relationship between the use of social media platforms (interventions) and public health protection against COVID-19 as a pandemic disease?

-Social media platforms include a wide variety of networking sites (eg, Facebook), information-disseminating platforms (e.g., YouTube), and micro blogging services (eg, Twitter). These platforms and many others can be used to create and publish knowledge and information about potential health and disease risks and

interventions as well as healthy lifestyles and effective health policies and strategies. In contrast to the campaigns occasionally launched by traditional media, campaigns launched through social media platforms often successfully convert knowledge and information on different health topics into daily fruitful web-based discussions and conversations. Another key advantage of web-based social media data, in addition to the availability of an increasingly large volume of data, is that it is highly contextual and networked. For example, there will be robust spatiotemporal sentiment toward a new vaccine, whether positive or negative. Risk factors such as drug abuse, smoking, poor diet, and lack of exercise and their associated diseases are often found to be clustered in a population. A better understanding of social media platforms and their health data will help broaden the utility of social media in public health.

-Social media platforms constitute a powerful means of communication that can be used to elevate public awareness of infectious diseases, particularly new ones, in terms of outbreak dates and spreading developments. Members of the public turn to both traditional and social media to obtain information on emerging infectious diseases which represent unprecedented risks to people. The public perceptions of these risks are shaped depending on how information is communicated across social media platforms. This in turn affects people's behavior as well as the decisions they make. In addition to information dissemination through social media platforms, the users of these platforms participate in discussions and conversations by giving their own opinions and presenting their own experiences. However, information disseminated through social media platforms often lacks credibility because the users often generate it themselves rather than by medical specialists or professional health care institutions; therefore, this information may lack reliability, accuracy, correctness, or usefulness. As a result, the WHO has called for initiative-taking and effective use of social media platforms to disseminate information on health issues, explicitly on emerging infectious diseases, to unspecialized persons and the public.

Literature Review (What do researchers think?)

Social media platforms have attracted the interest and attention of researchers and practitioners in the health domain, who use them for different purposes. These include professional training and development of clinicians; formation of health networks and support groups; provision of funding for health institutions; facilitation of cooperation and coordination among health professionals; monitoring of infectious diseases.

Even though social media platforms provide professionals in the public health domain with numerous valuable opportunities and benefits, usage of social media platforms by professionals is associated with several challenges, the most important of which are detecting infectious disease outbreaks, monitoring emergencies, predicting disease trends, and measuring the public's awareness and responses. However, many studies have reviewed and explored the potential applications of social media platforms for public health communication. social media platforms allow health practitioners to establish a direct relationship with their clients and that health promotion planners must put forward their creative best to integrate social media platforms within their strategies to make full use of the potential of these platforms when marketing their products and services.

They recommended the use of social media programs to support existing disease surveillance systems. Moreover, a few studies focused on the role of social media platforms in promoting health protection and increasing the relevance of public health messaging, in addition to identifying the lessons learned from social media health campaigns.The importance of controlling the spread of influenza and reducing the infection effects on a population to public health. Social media campaigns related to epidemics or pandemics can be beneficial in conveying information to the public, thereby inducing positive attitudes and behaviors that may slow the spread of the disease, such as hand washing and social distancing.

- Studies on social media campaigns and healthy behavior have reported that social media campaigns can elicit positive behavior changes and even prevent

negative behavior changes in individuals. Social media platforms can be used to reduce the spread of pandemics, thereby lowering the levels of fear and anxiety among the public. Researchers have argued that social media communication can transfer useful information about infectious diseases based on identifying and tracking users' behavioral patterns. Considering that the campaigns launched on social media platforms represent a variable whose growth depends on the number of individuals infected. The proposed model assumes that social media health campaigns lead to behavioral changes among individuals, causing them to isolate themselves and protect themselves from infection.

Further, it was assumed that social media health campaigns grow as the mortality rate of the disease increases. Researchers investigated the role of social media platforms in eliminating infectious diseases in the presence of treatment; they found that information conveyed to the public by social media platforms through health campaigns leads to behavior modification. Another study showed the influence of information related to vaccination against infectious diseases on the endemic state; the results indicated that lower social media coverage leads to a globally stable endemic state. In contrast, the endemic state is characterized by instability and fluctuations in the case of higher social media coverage.

Previous research has found that disease prevalence is controlled by social media coverage. Behavioral changes related to infectious diseases through campaigns launched by print media, social media, and the internet are limited to a smaller population of educated people. In comparison, television advertisements tend to be capable of affecting the behavior toward infectious diseases of a larger population that consists of less educated people; therefore, television advertisements are more effective than other types of media. It has been found that social media health campaigns are associated with the number of infected individuals, where launching more campaigns on social media platforms reduces the number of infected people. The effectiveness of interventions made by social media networking sites in modifying the health behaviors of individuals. Researchers found that internet data contribute to conveying useful information to the public, supporting the existing health surveillance systems, and assisting in the fight against disease. also, most citizens lack accurate and relevant knowledge

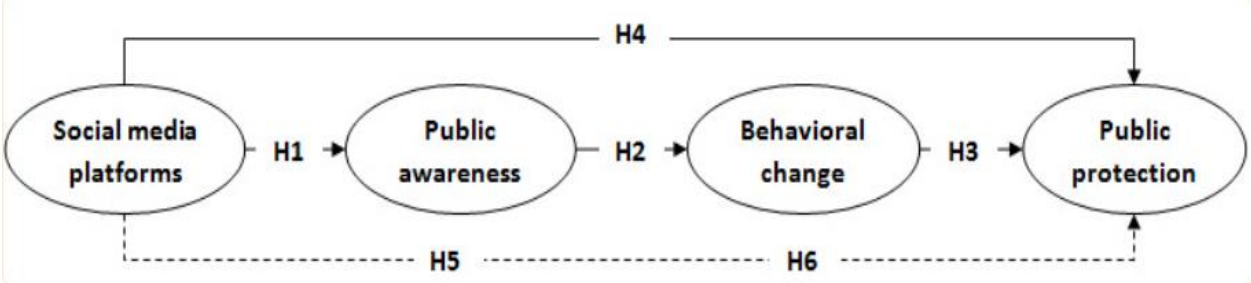
about the spread of infectious diseases over time and across space. Therefore, social media platforms can be used to establish a database of disease occurrences in terms of time and space. As useful surveillance tools, information on social media platforms was found to outperform official information about the outbreak and spread of infectious diseases, particularly in timeliness.

Study model and how to implement it:

Elevating public health awareness was found to require the incorporation of some theories of behavioral change into social media health interventions. behavioral change theories (e.g., social cognitive theory and health belief theory) can be beneficial when applied to social media initiatives because they help public health authorities understand the process of changing behaviors and why people behave in a precise manner, thereby enabling the health authorities to evaluate and modify health interventions. According to the Health Belief Model, people tend to take preventive actions if they feel that they are seriously threatened. Based on this, health interventions should address the specific perceptions of individuals about susceptibility and benefits. The behavioral change approach has been found to improve health by changing people's lifestyles. It is assumed that individuals must understand basic facts about a specific issue related to their health to be able to change their lifestyles because of feeling threatened, especially by an infectious disease. In this context, individuals should learn a group of skills and be granted access to suitable services.

Behavior changes include but are not limited to hand washing, wearing masks, social distancing, avoiding public gatherings, sanitation, and isolation. Interventions aimed at promoting public health can improve the quality of health in society and support the policies and programs run by official health authorities in fighting the outbreak and spread of infectious diseases. If people have trust in these policies and programs, they are likely to respond positively to public health interventions and participate in the launched health promotion programs in large numbers. Social media health campaigns can induce positive behavioral changes and even eliminate negative ones in individuals. the advantages of social media health interventions are cost-efficiency, ubiquity, and passing geographical

barriers. The tremendous growth in social media networking sites has opened the door to more opportunities to disseminate health interventions to the public in real time and irrespective of geographical location, thus leading to public health promotion and positive behavioral changes. Therefore, an integrated conceptual model was developed to guide the objectives of this study. The expected relationships among these constructs are illustrated in Figure.



Based upon the above model, the following hypotheses were formulated concerning the role of social media campaigns in increasing public awareness of COVID-19 as a pandemic disease in Egypt:

Hypothesis 1 (H1): The use of social media platforms is significantly increasing public health awareness.

Hypothesis 2 (H2): Public health awareness is significantly contributing to public health behavioral change.

Hypothesis 3 (H3): Public health behavioral change is significantly increasing public health protection.

Hypothesis 4 (H4): The use of social media platforms is significantly increasing public health protection.

Hypothesis 5 (H5): Public health awareness is significantly mediating the relationship between social media platforms and public health awareness.

Hypothesis 6 (H6): Public health behavioral change is significantly mediating the relationship between the use of social media platforms and public health awareness.

study design

We used a quantitative method with an exploratory and descriptive design. To confirm the conceptual model of the research and to verify the research hypotheses, a survey questionnaire was used to collect data. The target community for this research consists of all followers on any social media platform in Egypt. To reach them, a web link to the survey was sent to potential respondents during the period between 15 April and 30 April. The survey was prepared in both Arabic and English, and samples were taken from social media users for data collection. resulting in an easy-to-understand survey questionnaire.

Facebook contributes to changes in my behavior to prevent COVID-19 by taking various preventive measures (such as not shaking hands or kissing, not leaving the house, eating healthy foods and vitamins, general hygiene, less anxiety, and fear of illness, and increasing religious belief).

goal	**Increasing people's awareness of COVID - 19.**
Social media strategy	Use Facebook and TV because the majority or all the people use Facebook and watch TV, and people will be more vulnerable to ads and raise awareness.
KPI	Reduce exposure to disease by responding to advertisement and campaigns and raise awareness.
Social media tactics (Methods)	1-Make all channels warn of the danger of this disease and publish how to prevent it. 2-put short ads on all videos on Facebook.
Metrics	When we find that the people follow the methods of prevention, distance, and the small number of injuries.

descriptive analysis

To illustrate the respondents' positions above each question, they were posed in the assessment. To examine the mediating effects of public awareness, public behavior change, and social media platforms on public protection, we considered direct and indirect effects. It was found that public awareness and public behavior change significantly affected public protection directly

Principal Findings for the study:

In this study, we aimed to explore the impact of using social media platform applications on health and safety during the COVID-19 pandemic through public health awareness and behavioral changes as mediating factors in Jordan. To achieve the study objectives and conduct the research using a systematic approach, a conceptual framework was developed based on a literature review and health belief change theory. The potential benefits of using social media platforms in public health protection against pandemic diseases include dissemination of public health interventions, enhanced public awareness, promotion of healthy behavior, improved health outcomes, and provision of health information to the community. The analysis provides empirical evidence regarding the impact of using social media platforms on public health awareness, public health behavior changes, and health protection against COVID-19. These hypotheses significantly and positively supported the linkage between use of social media platforms and public health awareness, public behavioral changes, and health protection. Numerous research studies have explored the relationship between the use of social media platforms and public health. Furthermore, the analysis provided empirical evidence regarding the effectiveness of public health awareness on public health behavioral changes. The results showed that the effect was positive and significant.

The results clearly showed that public health awareness and public health behavioral changes mediated the effects of social media platform use on health protection; however, the mediating effect was partial. Additionally, the results indicated a significant and positive indirect effect of social media platform use on health protection against COVID-19 through public health awareness and public

health behavioral changes. The results showed a significant and statistical effect of social platforms use on health protection against COVID-19 without the mediating effects of public health awareness and public health behavioral changes.

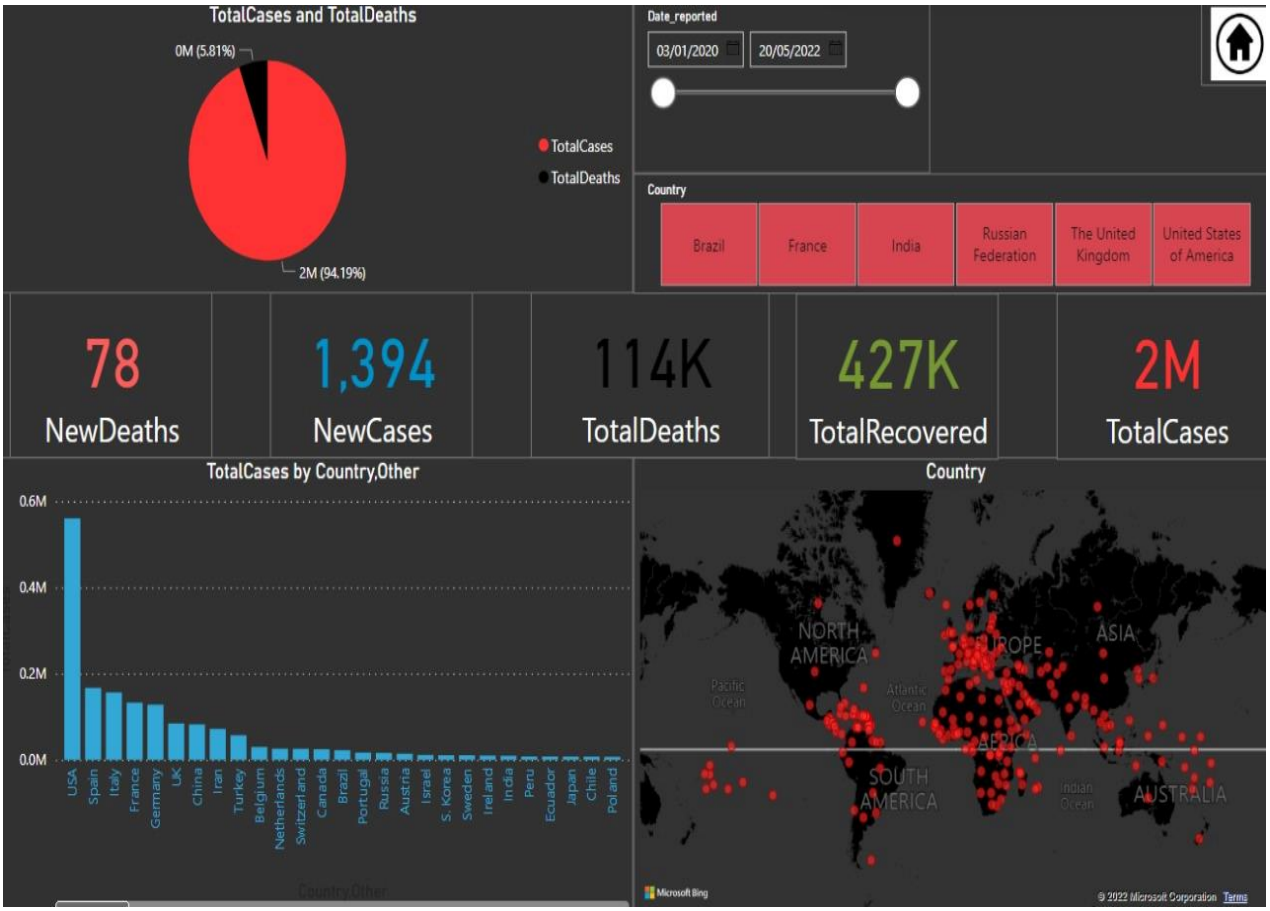
was the indirect effects of social media platform use on health protection through public health awareness and public health behavioral change as mediators were both positive and significant. Therefore, the mediating effects of public health awareness and public health behavioral changes between usage of social media platforms and public health protection may be a new relationship. The results indicated that social media use had a significant and direct positive effect on public health protection. Social media platform use also had a direct effect on public health awareness; this effect was also significant, as was the effect of public health awareness on public health protection against COVID-19. However, no previous empirical research studies have examined the mediating effects of public health awareness and public health behavioral changes on the relationship between social media use and public health protection.

Therefore, the results confirm that public awareness and public health behavioral changes have vital mediating effects on the relationship between the use of social media platforms and public health protection, Overall, the study validated the use of social media platforms to improve public health protection through public awareness. Therefore, we conclude that social media campaigns should be used to inform the public so that behavior changes can result.

Conclusion:

Our findings suggest that the use of social media platforms can positively influence awareness of public health behavioral changes and public protection against COVID-19. Public health authorities may use social media platforms as useful tools to increase public health awareness through the dissemination of brief messages to targeted populations. More research is needed to validate how social media channels can be used to improve health knowledge and adopt healthy behaviors in a cross-cultural context.

This is a statistic we made on the number of deaths and new deaths the number of new infections and injuries and number of recovered in the world:



References

1-https://www.jmir.org/2013/4/e85/

2-https://dx.plos.org/10.1371/journal.pone.0141423

3-https://www.gov.uk/government/publications/antibiotic-prescribing-and-behaviour-change-in-healthcare-settings

4-https://publichealth.jmir.org/2020/3/e19332/