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Government Social Media Engagement and Health Perceptions during the COVID-19 crisis: A Cross-Sectional Study¹

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Government social media (GSM) accounts were increasingly used by governments worldwide to support strategic crisis communication efforts during the global COVID-19 pandemic, particularly to influence people's perceptions and behaviors. However, little is known about the potential connections between users' engagement on GSM platforms and their own health perceptions regarding COVID-19 and related preventive behaviors. Adopting an interdisciplinary perspective and drawing on the Health Belief Model (HBM), the present study employed a survey research method to collect data from 2,163 Facebook followers of the Ministry of Public Health (MoPH) in Lebanon. The collected data was subsequently analyzed using descriptive statistics and bivariate Pearson's correlation tests. The findings reveal a significant association between active information-seeking on the MoPH Facebook page and all HBM constructs (perceived susceptibility, severity, benefits, and barriers), while passive exposure was associated with three of these constructs. GSM participation, including liking, commenting, and sharing, was significantly associated with perceived severity and benefits. These novel insights represent an initial step towards a deeper understanding of the purposeful and influential use of GSM during health crises. Theoretical contributions and policy implications are discussed in detail.

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Keywords: government social media; exposure; participation; health beliefs;
COVID-19

Introduction

Strategic communication, defined as “the purposeful use of communication by an organization to fulfill its mission” (Hallahan et al., 2007, p. 3), stands as an essential guide, steering organizational responses amidst times of uncertainty. During a health crisis, such as the COVID-19 pandemic, government organizations strive to discover novel avenues to effectively engage their audiences, and incorporate communication channels to purposefully influence health-related perceptions and behaviors (Su et al., 2022). In response to the outbreak, governments implemented stringent social control policies to reduce the transmission of COVID-19 and protect public health. These policies included mandating preventive behaviors such as wearing masks and practicing social distancing. However, the effectiveness of these measures depends not only on government actions but also on citizens’ adherence, which can be influenced by government communication strategies aimed at shaping perceptions and opinions (Mazzoni et al., 2022). Besides, public responses to health crises are affected by various psychological factors, such as individuals’ perceptions of susceptibility and perceived severity of the disease (Yeo et al., 2022; Wise et al., 2020). In this context, Government Social Media (GSM) accounts play a pivotal role in achieving this influence, serving as a reliable support system for organizations in strategically shaping audience perceptions and guiding behavioral trajectories (Islm et al., 2021; Mat Dawi et al., 2021).

The strategic use of social media platforms by governments has been instrumental in effectively reaching and informing large populations, empowering them to protect themselves and their loved ones, thus mitigating the physical and psychological impacts of the COVID-19 crisis (Syn, 2021; Malik et al., 2021). In contrast, amidst escalating

mortality rates and widespread fear, individuals exhibited increased engagement with GSM accounts, stemmed from a desire to stay updated on the latest COVID-19 developments and acquire knowledge on effective protective measures (Islm et al., 2021). Engagement behaviors on GSM platforms manifest in two primary forms: consumption, which signifies silent actions, and participation, which denotes more visible or salient activities (Guo et al., 2018; Khan, 2017; Dolan et al., 2016). Content consumption primarily involves exposure to information through active information-seeking behaviors and passive viewing of content (Shen et al., 2018; Luo et al., 2021), while participation involves active interaction with content through actions such as liking, commenting, and sharing (Guo et al., 2021; Guo et al., 2018). The concept of public engagement on social media has gained significant importance in contemporary corporate and strategic communication, particularly in terms of leveraging social media for informational purposes and fostering dialogic communication with stakeholders (Shang et al., 2022; Lai et al., 2020; Plowman & Wilson, 2018). However, insufficient research has been devoted to investigating the psychological implications that may arise from such engagement. (Wang et al., 2017).

In Lebanon, where the country grapples with multiple crises, including an economic downturn leading to a collapsing medical system, the government's strategic communication endeavors have played a crucial role in disseminating vital information to the public and alleviating the strain on healthcare infrastructure, thus mitigating the impacts of the pandemic (Melki, 2022). However, there is a lack of clarity regarding the specific approaches adopted by the Lebanese government, particularly in terms of their utilization of social media platforms. Furthermore, exploring the influence of government's social media communication strategies on individuals is paramount for understanding the logic of social media during crises, thus enhancing the efficacy of

future public health campaigns and preparedness efforts (Eriksson, 2018). Nevertheless, no research to date has examined this perspective in Lebanon, revealing a gap in the current literature.

Disciplinary integration is an integral part of strategic communication, enabling a comprehensive understanding of complex communication processes between organizations and stakeholders, including public engagement on social media (Werder et al., 2018). Drawing on interdisciplinary literature and integrating strategic communication with health behavior change concepts, the primary objective of this research is not to scrutinize GSM strategies, but rather to investigate the associations between users' engagement in GSM and their health beliefs, thereby addressing an unexplored domain within the field of strategic communication research. Specifically, this study aims to examine the potential associations between users' exposure to GSM information through active seeking and passive viewing, as well as their participation in GSM, with their own health perceptions, which are essential in determining the adoption of preventive behaviors. The study analyzed data collected through a survey distributed in 2021 to the Facebook followers of the Ministry of Public Health (MoPH) in Lebanon.

Literature review

Strategic social media use for disease outbreak management

Social media platforms have provided government organizations new opportunities for strategic communication during periods of crisis, enabling a more informed and coordinated approach to address pressing challenges (Eriksson, 2018). Central to these opportunities is GSM, defined as the official use of social media accounts, such as Facebook, Twitter, Weibo, and TikTok, by governmental or local authorities to distribute information to the public (Tang et al., 2021). These accounts facilitate the exchange of

crisis-related information, timely updates, responses to citizens' inquiries, and solicitation of feedback to enhance crisis management strategies (Guo et al., 2021).

The literature extensively documents the strategic use of social media for disease outbreak management (Tang et al., 2018). The COVID-19 pandemic has further demonstrated the critical importance of strategic GSM communication, providing a natural landscape for investigating this topic on a larger-than-ever scale. Extant research has shown that GSM accounts are valuable for disseminating situational and risk-related information during COVID-19, helping people form accurate risk perceptions, promoting personal protective actions such as social distancing and mask wearing to inhibit disease spread, and mitigating public anxiety (Madvig et al., 2022; Wang et al., 2021; Syn, 2021; Malik et al., 2021). Besides, given the substantial challenges presented by the spread of misinformation on social media, which significantly affects organizations and their strategic crisis communication and management efforts (Jahng, 2021), governmental entities have increasingly adopted the use of their social media accounts to combat the dissemination of false information and efficiently quell unfounded rumors (Lovari, 2020). The use of social media by government organizations can also promote public engagement to mitigate the impact of the pandemic and protect lives (Kim et al., 2021; Chen et al., 2020), and support vaccine communication (Sesa et al., 2022).

The bulk of research in this area typically relies on manual or computer-assisted content analytic methods to examine a range of content strategies on GSM. While these investigations provide valuable insights into the informational and stylistic aspects of posts, they do not adequately delve into how individuals' use of GSM may potentially affect their health outcomes, thus limiting the understanding of how such interactions align with government communicative goals.

Information exposure on social media

In recent years, the widespread use and accessibility of social media have surged, leading to a substantial increase in information exposure on these platforms. Information exposure on social media can be considered, in broad terms, as the frequency of consumption of news and information related to a particular topic on these platforms (Feng & Tong, 2022; Liu, 2021; Shen et al., 2018). Information exposure can occur through active means, such as deliberate information seeking, or through passive means, which involves exposure to information as a result of regular media use (Thorson et al., 2021; Luo et al., 2021; Lin et al. 2020; Liu, 2020).

Within the field of health communication, extensive research has examined users' exposure to health-related information on social media and the subsequent impact on their cognitive and behavioral outcomes (Yang & Wu, 2019; Shen et al., 2018). Furthermore, studies have explored the effects of social media exposure during outbreaks such as the South Korean MERS outbreak (Oh et al., 2021), and the measles outbreak in the United States (Kim & Hawkins, 2020). During the COVID-19 outbreak, exposure to COVID-19 information on social media was found to be associated with an increase in practicing preventive behavior, mediated by personal responsibility (Liu, 2021), worry (Liu, 2020), and perceived threat (Farooq et al., 2020). Lin et al. (2020) reported that social media exposure was linked to perceptions of pandemic severity. Similarly, Zeballos Rivas et al. (2021) revealed a positive association between extensive exposure to COVID-19 information on social media and increased risk perception for COVID-19, subsequently influencing individuals to adopt preventive behaviors. Moreover, exposure to COVID-19 related information on social media has been found to be associated with increased vaccination intention (Luo et al., 2021). In Lebanon, exposure to news on social media was positively associated with COVID-19 knowledge (Melki, 2022).

Prior studies have demonstrated that individuals are extensively exposed to government information about the pandemic through GSM platforms, heavily relying on the posts from government accounts as their primary and trusted source of information, whether actively sought or passively encountered (Islm et al., 2021; Tang & Zou, 2021; Luo et al., 2021). During the pandemic in Malaysia, Mat Dawi et al. (2021) discovered a significant correlation between exposure to government-disseminated information on social media and individuals' attitude toward protective behaviors. However, the association between followers' exposure to GSM COVID-related news and their health beliefs, specifically within the context of Lebanon, remains unknown. Given the limited theoretical and empirical research on GSM, this study does not establish a formal hypothesis but rather explores the research question:

RQ1: Does followers' exposure to information on GSM have an association with their perceptions of COVID-19?

Users' participatory behaviors

Besides engaging in GSM content consumption, users can actively participate in response to GSM posting activity, leveraging the functions provided by common social media platforms. GSM participation can be defined as the active involvement with government-authored posts on social media platforms, which includes activities such as liking, commenting on, and sharing the content (Guo et al., 2018). These activities indicate incremental levels of user participation, with "likes" representing the minimal level of participation effort, while "comments" and "shares" require higher degrees of involvement and interaction, reflecting deeper levels of participation (Lai et al., 2020). Specifically, liking typically mirrors positive emotional feedback, commenting denotes cognitive engagement reflecting mental effort, and sharing, requiring user endorsement

and dissemination within their network, represents the perceived value of the message (Zhou et al., 2022).

During a crisis, such as the ongoing COVID-19 pandemic, citizens participation in GSM played a pivotal role in facilitating governments' understanding of public concerns, evaluation of information quality, enhancement of crisis communication and management strategies, as well as the promotion of preventive behaviors among the populace (Guo et al., 2021; Luo et al., 2021; Ngai et al., 2020; Chen et al., 2020). For instance, the comment section of GSM posts serves as a medium for individuals to express their personal perspectives and opinions, facilitating interactive and dialogic communication, particularly when individuals receive responses from government, while also enabling officials to assess public sentiment, gather feedback, and encourage broader participation in the dialogue. Similarly, sharing GSM posts by users can exponentially raise awareness of the crisis situation, garnering attention and fostering a collective sense of urgency (Cheng et al., 2021; Guo et al., 2021). Nevertheless, previous research has indicated that participation in GSM may be undermined by factors such as concerns over personal information privacy, government monitoring, and lack of trust (Khan et al., 2021).

During COVID-19, evidence suggested that increased participation in GSM was associated with the promotion of online civic behavior (Ism et al., 2021) and spurred users to adopt recommended online security measures against crisis-related scams (Tang et al., 2021). However, the relationship between GSM followers' participation and their perceptions of COVID-19 and its associated preventive behaviors remains unexplored, especially given the strategic communication goal of government health organizations to utilize media tools during times of crisis to influence health perceptions and behaviors. Therefore, this study asks the following question:

RQ2: Does followers' participation in GSM have an association with their health beliefs about COVID-19?

Developing an Integrated Framework

Scholars have adopted theories from the study of television effects, such as cultivation theory, to understand the impacts of GSM exposure and participation. Cultivation theory suggests that extensive television viewing shapes perceptions and beliefs, aligning viewers' understanding with recurring messages (Gerbner et al., 2002; Gerbner, 1998). Tang et al. (2021) found that GSM participation influenced online information security behavior through perceived severity and vulnerability, drawing on cultivation theory. Similarly, Williams and Fedorowicz (2019) demonstrated that frequent viewing and commenting on police posts on social media were associated with higher satisfaction with local police departments.

In a similar vein, various scholars have applied the *expression-effects paradigm* to explore the impact of social media participation on health beliefs during outbreaks, focusing on the concept of "expression" (Kim & Hawkins, 2020; Yoo et al., 2016). Expression, defined as a user's tendency to share information or comment in alignment with their beliefs, can potentially reinforce self-health beliefs through the process of self-perception; thus, when individuals actively share information related to the outbreak, it is likely to heighten their belief in the severity of the issue or their perceived risk (Kim & Hawkins, 2020). The concept of the influence of expression is rooted in the fields of communication and psychology, recognizing the act of self-expression as a reflective process involving cognitive activity that has the potential to shape the beliefs of the message producer (Pennebaker, 1997; Bandura, 1986; Bem, 1967). Kim and Hawkins (2020) found that the act of individuals expressing information related to measles outbreaks on social media, particularly through sharing and commenting, was positively

associated with their own health beliefs, including self-efficacy, perceived susceptibility, and perceived severity. Thus, the cultivation theory and expression-effects paradigm provide theoretical frameworks for understanding the impact of GSM exposure and participation on perceptions.

In order to examine the relationship between engagement in GSM (i.e. exposure and participation) and users' health beliefs, the Health Beliefs Model (HBM) (Rosenstock et al., 1988) was selected. Central to the HBM are individuals' health beliefs, which serve as determinants of their engagement in various health-related practices and behaviors (Glanz et al., 2008). HBM is a theoretical framework widely used in health psychology and behavior change research and consists of six key constructs: Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, perceived self-efficacy, and cues to action. The HBM constructs were initially developed to aid in the prediction of preventive behavior (Rosenstock, 1974), and their robust predictive capacity has been evident during outbreaks like the COVID-19 pandemic (Raude et al., 2020). Specifically, the components of the HBM have shown significance in explaining individual protective behaviors such as regular handwashing and alcohol-based surface cleaning (Karl et al., 2022), as well as predicting individuals' intention and acceptance of vaccines during various pandemics (Zartaloudi, 2022). In the context of strategic communication, the HBM has been employed to assess the effectiveness of GSM messaging strategies during outbreaks (Alhaimer, 2022; Guidry et al., 2020). However, to date, the scholarly literature lacks an examination of the relationship between GSM engagement and individuals' health beliefs regarding COVID-19. This research, therefore, aims to explore this uncharted territory using the HBM as a lens. Specifically, the analysis examines the four original constructs of the HBM: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Due to the inherent complexities in studying cues to

action and perceived self-efficacy through survey methods (Glanz et al., 2008; Biglan, 1987), these constructs were excluded from investigation, thereby focusing exclusively on the HBM's core, original components.

Merging insights from strategic communication, media studies, health communication, and psychology, this study proposes an integrated framework that elucidates the potential interplay between exposure to and participation in GSM and individuals' COVID-19-related health beliefs (see **Fig. 1**).

Method

Study Design and Sampling

A cross-sectional online survey methodology was employed in this study. Cross-sectional surveys are commonly used to examine relationships between media influence and individuals' opinions, behaviors, and beliefs, without intervention or bias of the researcher (Hansen & Machin, 2018). Online surveys, as self-administered questionnaires, offer the advantage of real-time data collection and participant flexibility (Fink, 2017). The implementation of online surveys is crucial in capturing timely data on individuals' GSM engagement, health perceptions, and behaviors during the pandemic, especially considering the lockdowns and restrictions imposed (Islm et al., 2021).

Participants were recruited using non-probability convenience sampling method. Convenience sampling involves selecting willing and available participants who meet the survey criteria, saving time and resources in sampling and implementation (Fink, 2017). After obtaining approval from the E-national Health Department in the Lebanese MoPH, the questionnaire was developed using Google Forms and shared on the ministry's official Facebook page. The call for participation was communicated through 12 image-based posts published between September 24 and December 31, 2021. Further information

about the research objectives was provided on the ministry's website. The questionnaire was prepared in both English and Arabic languages and underwent pilot testing to ensure readability, clarity, and comprehensiveness of the items. The selection of the MoPH Facebook page for this research was driven by a trifold rationale. Firstly, the MoPH is acknowledged as the official entity responsible for managing the pandemic outbreak. Secondly, Facebook stands as the dominant social media platform in Lebanon (Northwestern University in Qatar, 2019), reinforced by the MoPH's prominence as the government health agency with the most substantial following, surpassing 175,000 followers as of September 2021. Lastly, Facebook has emerged as a favored source of information amid the COVID-19 pandemic (Ahmad & Murad, 2020).

Based on the results of the pilot phase involving 30 questionnaires, no revisions or eliminations of questions were deemed necessary. Participants were not offered any incentives for their participation. To submit their responses, participants were directed to click on a provided link in the post caption, which redirected them to a Google Sheets form. Prior to proceeding, individuals were required to provide consent by selecting "I agree to participate in this study" and confirming their active following of the Lebanese Ministry of Public Health's Facebook page. A brief summary of the study was also presented on the same page. Responses from participants who did not provide consent or confirm their following of the Ministry's Facebook page were excluded from the dataset.

The survey comprised questions covering various aspects, including participants' demographic background, GSM exposure, GSM participation, and constructs derived from the HBM pertaining to COVID-19. Additionally, participants were asked about the duration of their following of the MoPH's Facebook page, with options ranging from "less than 6 months" to "more than 2 years." A total of 2,163 individuals actively participated in the study.

Measures

To measure the variables of interest, the current study adopted validated items from existing literature. The survey questionnaire included questions that were derived from previous research and tailored to align with the specific objectives of the study (refer to **Table 1** for a detailed list).

GSM exposure

COVID-19 information seeking: Active information seeking was assessed using six items adapted from Lin et al. (2020). The questionnaire included sample items such as “Seek information about the number of daily cases and death toll” and “Seek information on the transmission mode (e.g., how does COVID-19 spread between people?).” Participants indicated their information-seeking behavior on a 4-point scale, ranging from “never” to “rarely,” “sometimes,” and “often.”

Passive exposure: The frequency of passive exposure was measured using a single item, “How often do you see a Facebook post by MoPH?”, based on previous research (Williams & Fedorowicz, 2019; Luo et al., 2021; Khan, 2017). Participants indicated the frequency of encountering MoPH Facebook posts in their feed by selecting one of three response options: rarely (monthly), sometimes (weekly), or often (everyday) with regard to “I see MoPH Facebook posts in my feed”.

GSM participation

The items measuring GSM participation were adapted from Tang et al. (2021) and Jia et al. (2018). Facebook users’ behavior can be categorized into different levels, with “like” representing the lowest level, “comment” as the intermediate level, and “share” as the highest level (Kim & Yang, 2017). Participants were asked to indicate their frequency of participation in the MoPH posting activity on Facebook. Specifically, they were asked

about their frequency of pressing “like” for posts, commenting on posts, and sharing posts. The level of engagement was determined based on the selected option, with the highest value assigned to the option indicating the highest level of engagement. In the case of multiple responses, the option with the highest value was considered as the representative level of engagement.

HBM constructs

Questions on the four key constructs of the HBM were adapted from previous studies, including Raude et al. (2020), Lin et al. (2020), and Sánchez-Arenas et al. (2021). Perceived severity was measured using a single item (“How serious do you think COVID-19 is?”) rated on a 4-point scale from “not at all serious” to “very serious.” Perceived susceptibility was assessed with a single item (“What do you think are your chances of getting COVID-19?”) rated on a 4-point scale from “certainly no” to “certainly yes.” Perceived benefits were assessed using a single item (“Do you think that taking preventive measures (e.g., wearing a mask) would reduce the risk of a health threat?”) rated on a 4-point scale from “certainly no” to “certainly yes.” The questions about perceived barriers included a combination of eight items assessing the degree of difficulty in complying with preventive measures with response options ranging from “very difficult” to “very easy.”

Reliability

While previous studies have assessed the reliability of the multi-item measures used in this analysis (Lin et al., 2020; Raude et al., 2020), the present research also evaluated the reliability of the multi-item constructs. The active information seeking measure, derived from GSM exposure, demonstrated high internal consistency with a Cronbach’s alpha coefficient of 0.865. Similarly, the perceived barriers of adopting

protective behaviors measure, derived from the HBM, exhibited strong internal consistency, with a Cronbach's alpha coefficient of 0.862. These values suggest that the instrument has adequate reliability (Nunnally, 1978).

Furthermore, a single-item measures strategy was implemented, an approach that has received validation from prior research. The employment of single-item measures is widely recognized as not only valid and reliable, but also a standard practice (Allen et al., 2022). Single-item measures, providing time-efficiency, clarity, and minimal participant load, with proven predictive validity comparable to multi-item measures (Allen et al., 2022; Bergkvist & Rossiter, 2007), are particularly vital in situations such as present-day Lebanon, faced with severe financial, health, and political crises, thereby necessitating the alleviation of survey burden. Previous studies have commonly used single-item measures to assess psychological factors associated with outbreak perception (Park & Oh, 2022; Rubin et al., 2009). Similarly, the measurement of social media exposure and participation was conducted using a single-item measure, as demonstrated in prior research (Feng & Tong, 2022; Jia et al., 2018).

Data Analysis

Statistical analyses were conducted using IBM SPSS software (version 25). The study employed descriptive statistics, and bivariate Pearson's correlation tests to examine the relationships between GSM exposure, GSM participation, and the constructs of the HBM. A p-value of less than 0.05 was determined as the threshold for statistical significance.

Results

Profile of Respondents

Table 2 exhibits the demographic characteristics of the 2,163 study participants, which include gender, age, place of residence, level of education, nationality, and monthly

income. The majority of participants, 91.4% (n=1,978), were of Lebanese nationality. Of the sample, 65.3% (n=1,413) were female participants, highlighting their significant involvement as major contributors to GSM accounts, while 66.2% (n=1,431) held at least a bachelor's degree. The age demographic of 23 to 45 years represented the largest segment among the MoPH Facebook page followers, comprising 73.8% of the total sample, indicating a high level of involvement in GSM platforms among this age group. Nearly half of the respondents, 41.7% (n=903), were residents of the Mount Lebanon governorate. Surprisingly, a considerable 26.8% (n=579) reported zero monthly income, reflecting the challenging economic circumstances in the country.

Regarding the duration of following the MoPH's Facebook page, the largest cohort, comprising 35.9% (n=776), had been following for one to two years, along with smaller percentages of followers for between six months and one year (23.9%, n=516) and less than six months (16.7%, n=362). This suggests that followers started following the MoPH's Facebook page coinciding with the progression and evolution of the pandemic. In contrast, only 23.5% (n=509) had been following for over two years.

Descriptive results

Table 3 provides a summary of the descriptive findings. In terms of COVID-19 information seeking, the primary motivation for followers of the MoPH Facebook page was to remain updated with the current COVID-19 news, as indicated by 61.4% of the respondents (n=1,328). This was closely followed by the need to monitor the official statistics regarding daily case count and mortality rate, as reported by 57.1% of the respondents (n=1,236). Additional areas of interest included gaining insights into symptoms (44.4%, n=960), understanding transmission modes (42.1%, n=911), seeking treatment-related information (41.2%, n=892), and learning about preventive measures

(37.9%, n=820). The average score for information-seeking was roughly 3.19, indicating a strong interest in pandemic-related information from the MoPH Facebook page.

In relation to the passive exposure to the MoPH's Facebook posts, it was observed that a significant proportion of participants (49.4%, n=1069) reported daily views of the posts in their news feed. Additionally, 38.7% (n=837) reported viewing posts several times a week, with 11.9% (n=257) acknowledging infrequent views, only a few times per month. The mean score for the frequency of post views was calculated at 2.38 (SD 0.687), suggesting regular encounters with MoPH content in participants' news feeds.

Concerning the levels of participation in the MoPH Facebook page, a majority of participants (61.7%, n=1335) reported no interaction with the posts. However, a sizeable segment (31.5%, n=681) frequently 'liked' posts, whereas smaller proportions of the sample were observed to 'comment on' (2.5%, n=53) and 'share' (4.3%, n=94) posts regularly. The mean total engagement score was registered at 0.49 (SD 0.748), indicating a generally low level of active participation among the participants.

With respect to the HBM constructs, a significant portion of the participants, 1,834 in total, perceived COVID-19 as either a very serious threat (50%) or a serious threat (34.8%). Similarly, a substantial number of respondents, totaling 1,702, indicated a perception of probably (49.2%) to certainly (29.4%) contracting the virus, thus emphasizing a considerable perceived susceptibility. When it came to the perceived benefits, a significant majority (n=1516, 70.1%) robustly affirmed the efficacy of preventive measures in reducing the risk of COVID-19. Regarding barriers to protective behavior, the most commonly cited challenges included avoiding touching one's face (n=726, 33.5%), consistently wearing a mask (n=674, 31.2%), and refraining from group gatherings (n=536, 24.8%). The mean score for barriers to adopting protective behavior was 3.25 (SD 0.57). Overall, the high mean values for the HBM constructs suggest

comprehensive knowledge and firm perceptions concerning COVID-19 among the followers of the MoPH Facebook page.

Correlation analysis of key variables

Bivariate correlations were conducted to examine the relationships between the key variables investigated in this study: COVID-19 information seeking, passive exposure, GSM participation, and health beliefs.

As shown in **Table 4**, the findings revealed significant associations between information seeking related to COVID-19 news and all constructs of the HBM, including perceived severity ($r = 0.28, p < 0.01$), susceptibility ($r = 0.14, p < 0.01$), benefits ($r = 0.25, p < 0.01$), and barriers ($r = 0.05, p = 0.02$). Furthermore, a significant correlation was observed between passive exposure and all HBM constructs. Notably, positive associations were found with perceived severity ($r = 0.11, p < 0.01$), benefits ($r = 0.08, p < 0.01$), and barriers ($r = 0.11, p < 0.01$), while perceived susceptibility displayed a significant negative relationship ($r = -0.05, p = 0.02$). The analysis further identified a substantial and positive correlation between participation in GSM and two HBM constructs, namely, perceived severity ($r = 0.07, p < 0.01$) and benefits ($r = 0.05, p = 0.01$).

Discussion

Summary of the findings

The first research question comprised two components: COVID-19 information-seeking on the MoPH Facebook page and passive viewing of MoPH content, with the aim of exploring their correlation with the health beliefs of the page's followers. The study revealed associations between seeking COVID-19 related information through the MoPH Facebook page and all components of the HBM, indicating higher levels of perceived

severity and susceptibility, perceived benefits, and lower perceived barriers towards the adoption of preventive behaviors. Furthermore, the findings of the study indicated a positive and significant relationship between passive viewing of MoPH content on Facebook and the health beliefs of the followers, including higher levels of perceived severity, perceived benefits, and reduced perceived barriers. These findings are consistent with earlier research (Lin et al., 2020; Farooq et al., 2020), which suggested that information-seeking related to COVID-19 on social media can positively impact both the perceived severity and susceptibility of the disease and lower barriers to adopt preventive behaviors, and with prior research that highlights the role of passive viewing of social media posts in shaping perceived risk (severity and susceptibility) during the COVID-19 and MERS outbreaks (Alrasheed et al., 2022; Zeballos Rivas et al., 2021; Yoo et al., 2016). Notably, perceived risk, perceived benefits, and perceived barriers have been consistently identified as predictors of preventive behaviors during outbreaks in various studies worldwide (Karl et al., 2022; Sánchez-Arenas et al., 2021; Rubin et al., 2009), further emphasizing the significance of the present findings. Unexpectedly, the study revealed a significant negative relationship between passive exposure to MoPH posts and perceived susceptibility to COVID-19. This finding can be attributed to the presence of an optimistic bias phenomenon, where individuals who are exposed to MoPH posts more frequently may exhibit a tendency to downplay their personal vulnerability to the virus (Weinstein, 1989).

The second research question investigated the associations between GSM participation and users' health beliefs about COVID-19. The findings showed that increased participation in MoPH content was positively correlated with higher levels of perceived severity and perceived benefits. This finding aligns with previous studies that have demonstrated the influence of expressive acts, such as commenting and sharing

health information on social media during outbreaks, on individuals' own health perceptions, specifically their perceived risk related to the disease (Kim & Hawkins, 2020). It also supports the conclusions of Tang et al. (2021), whose research indicated that active participation in GSM platforms can enhance perceived risk. The findings of this study extend previous research by demonstrating that participation in GSM is positively associated with increased perceived benefits, emphasizing the importance individuals attribute to preventive behaviors in mitigating the spread of COVID-19, with benefits emerging as a crucial predictor of engagement in protective measures (Shah et al., 2021).

Theoretical contributions

The current study makes several theoretical contributions. First, it addresses a gap in the strategic communication field by focusing on the role of GSM during crises, which is an area that has received limited attention in comparison to corporate strategic communication research (Shang et al., 2022; Plowman & Wilson, 2018; Sng et al., 2019). While corporate communication emphasizes image repair and reputation management during crises, the communication priorities of government organizations prioritize the well-being and safety of the public (Liu et al., 2018), making the research on the influence of social media use in government contexts particularly important, as it can have a direct impact on saving lives.

Second, the current study contributes to the theoretical underpinnings of research on GSM, particularly in the context of health crises. While existing research in this field often draws on crisis communication literature, there is a lack of theoretical integration from media effects and psychology perspectives to enhance the understanding of the influence of social media in government settings. This study adds to theoretical advancement by incorporating concepts from cultivation theory, the HBM, and the

expression-effect paradigm, providing a foundation for examining the impact of GSM on its followers and their health perceptions. Therefore, the integrated model developed in this study can be applied in examining the impact of GSM on health beliefs during various types of health crises.

The third contribution of this study is to the literature on strategic social media crisis communication and management. Existing studies have focused on identifying the reasons for GSM participation during a crisis (e.g., Guo et al., 2021; Ism et al., 2021), how people engage with GSM's emergency messaging strategy (e.g., Chen et al., 2020; Ngai et al., 2020), and examining organizations' information dissemination on GSM (e.g., Syn, 2021; Malik et al., 2021). Some studies have even assessed the connection between information consumption and participation in GSM accounts with perceptions of government performance (Jia et al., 2018). However, limited research has explored the impact of GSM on individuals' beliefs and behavior during crises (Tang et al., 2021). By investigating the association between GSM exposure and participation with users' health perceptions about COVID-19 and its preventive behaviors, the findings contribute to the understanding of psychological consequences of strategic GSM use during crisis situations from the users' perspective.

Policy implications

This study has important implications for practitioners in the field. First, the findings highlight the potential role of GSM exposure in increasing perceived severity and susceptibility, recognizing preventive behavior benefits, and reducing barriers to practicing them. As a digital cultivation medium, GSM can significantly impact people's beliefs during crises. Governmental agencies should therefore continue to enhance their efforts in sharing timely and relevant information on GSM platforms during crises. Governments should also promote verified and official GSM accounts to ensure access

to accurate information, particularly in the presence of misinformation. Careful message development and selection are essential for maximum impact, while also considering the socio-demographic differences among the target audience. The use of targeted paid advertisements can be an effective strategy to expand the reach of the messages.

Second, the study findings illuminate the potential influence of individuals' expression activities (such as commenting and sharing) on GSM on their own health beliefs and preventive behaviors. As a result, government communication practitioners should intensify their efforts to encourage participating in official government accounts on social media and actively demonstrate to the public the significance of their participation during crises. This can be achieved through public awareness campaigns utilizing various communication channels and strategic social marketing techniques, designed to foster trust in the process of participation with government. These campaigns aim to educate the public about the tangible benefits of their engagement, such as sharing posts to enhance the visibility of critical information, reaching vulnerable populations to potentially save lives, and ensuring that individuals who may not be aware of government updates stay informed. Additionally, the campaigns should emphasize the value of public comments, highlighting how their input contributes to the decision-making process, problem identification, and the development of robust crisis management strategies. It is important to stress the protection of freedom of speech by laws, empowering individuals to freely express their opinions and suggestions on government posts. To enhance the reach and impact of these efforts, the use of social media influencers and opinion leaders can be strategically employed, leveraging their influence and audience to amplify the government's strategic communication initiatives in this regard (Dong & Lian, 2022; Sng et al., 2019). On the other hand, it is essential to train government staff in effectively

using social media during crises and engaging in discussions with users in order to enhance their digital communication skills.

Third, user engagement on GSM holds particular importance in relation to algorithms. In practice, content exposure on social media, particularly on Facebook, is influenced not only by personal interest but also by user engagement, which are mediated by algorithmic ranking and classification systems (Thorson et al., 2021). Facebook's algorithms, for instance, track an individual's patterns of online behavior, including likes, shares, or comments, on a specific post to determine subsequent exposure to relevant content (Bucher, 2016; Kite et al., 2016). As a result, participation in GSM during health crises, especially during heightened pandemic situations, can impact individuals' news feed experiences, thereby influencing their content exposure and shaping their perceptions of the health crisis. In this context, government communication specialists should strive to design content that motivates active participation, encouraging followers to react, leave comments, and share government updates. Extensive literature highlights the types of content that can generate higher engagement, such as incorporating call-to-action prompts in posts, using polls and surveys, using multimedia elements like photographs and videos, and leveraging dialogic communication features such as dialog loops, responsive comment handling, and interactive live Q&A sessions (Refer to Liu et al. (2020) for strategies on incorporating multimedia elements and harnessing dialogic communication on Facebook during crisis situations).

Lastly, it is crucial to emphasize the importance of monitoring the participatory process in GSM. This entails the government or a third party continuously tracking and analyzing participatory metrics to inform decision-making and facilitate adaptive strategies. Alongside traditional approaches, AI-powered data mining techniques, including sentiment analyses, deep learning, topic modeling, and natural language

processing, should be employed by GSM operators to analyze user comments and activity within the platform. These techniques improve message quality, provide insights into public opinion and participation levels, capture the public mood, and identify prevalent discussions in the digital sphere. Moreover, individuals on social media not only view main posts but also evaluate content based on likes, dislikes, and comments (Khan, 2017). A simple like can be perceived as an endorsement, with viewers attributing importance and interpreting it as validation by fellow citizens. Negative comments expressing resentment or dissatisfaction may lower content acceptance and negatively impact health beliefs. Governments should actively engage with citizens by responding to comments, rather than leaving the space solely for public discourse. In contrast, followers of GSM play an integral role in the monitoring process. By noting unanswered or unresolved comments, sharing feedback on their experience with the platform, mentioning other users, offering suggestions for improvements, reporting technical issues, and proposing new features, users provide valuable input to operators, enabling administrators to enhance the user experience, make necessary adjustments, and better serve the community. They can also actively contribute by mentioning government accounts in group debates, inviting others to follow government pages, customizing their news feed preferences by utilizing the “See First” feature to prioritize government posts, and reporting harmful or misinformation content. By doing so, followers enhance the overall participation and monitoring processes and foster effective communication between the government and the public. It is recommended to launch technical campaigns to educate and train individuals on how to engage in these actions effectively.

Limitations and future research

This study has several limitations. First, its use of bivariate analysis, though capable of identifying associations, may not capture the complexity of potential interactions or

confounding factors, suggesting future research should employ more advanced statistical methods. Second, the application of convenience sampling could introduce self-selection bias, potentially limiting the findings' generalizability, highlighting the need for future studies to consider probability sampling techniques. Third, the cross-sectional design of this study limited the ability to draw causal inferences and observe temporal changes in health perceptions or behaviors, indicating that longitudinal studies are desirable in subsequent research. Fourth, measuring certain constructs with single items might compromise their validity, thus future research could enhance measurement reliability by using multi-item scales (despite some studies endorsing single-item measures). Finally, it has not escaped notice that the observed associations between the variables examined in this study were found to be relatively weak, suggesting that other determinants may influence the relationship between the tested variables (Hayes, 2005). Future research should strive to broaden its scope by incorporating various influential factors, such as psychosocial, sociocultural, political, and media influences.

Conclusion

This research represents an initial step towards a deeper understanding of the purposeful and influential use of GSM during health crises. Anchored in the domains of strategic communication, media effects, and health psychology, the study illustrates the instrumental role that official government accounts on social media play in relation to public health perceptions during global pandemic events. Of particular interest are regions like Lebanon, where such research is not only scarce but also of exceptional importance. This investigation therefore not only reveals new insights into the understanding of the strategic use of social media by governments but also serves as a call for future research. Delving into the influence of strategic governmental social media communication on

shaping public perceptions and encouraging adherence to advised precautionary measures should be a priority across varied countries and crisis scenarios.

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Table 1. Measures.

Construct	ID	Item	Cronbach's α
COVID-19 information seeking	CIS1	Seek information about preventive measures (e.g. social distancing).	0.865
	CIS2	Seek information on transmission mode (e.g. how does COVID-19 spread between people?).	
	CIS3	Seek information on symptoms.	
	CIS4	Stay up-to-date with COVID-19 news	
	CIS5	Seek information on treatment and management.	
	CIS6	Seek information about number of daily cases and death toll.	
Passive exposure	EXP	How often do you see a Facebook post by MoPH?	
GSM participation	PAR	Select level of participation in MoPH Facebook page: “Frequently presses like on posts,” “Frequently comments on posts,” “Frequently shares posts,” “Does not interact with posts.”	
Perceived severity	SEV	How serious do you think COVID-19 is?	
Perceived susceptibility	SUS	What do you think are your chances of getting COVID-19?	
Perceived benefits	BEN	Do you think that taking preventive measures (e.g. wearing a mask) would reduce the risk of a health threat?	
Perceived barriers	BAR1	whenever possible, avoid touching my eyes, nose, and mouth.	0.862
	BAR2	Wear a mask all the time.	
	BAR3	Washing hands with soap frequently.	
	BAR4	Washing hands with soap (or disinfect hands) immediately after a cough or sneeze.	
	BAR5	Perform hand hygiene after having contact with respiratory secretions or contaminated objects.	
	BAR6	Cover mouth and nose with a tissue when coughing or sneezing.	
	BAR7	Avoid closeness with other people.	
	BAR8	Avoid group gathering.	

Table 2. Participants' demographic profiles.

Demographic	Category	Count (N=2163)	%
Gender	Female	1,413	65.3
	Male	750	34.7
Age (years)	Less than 18	72	3.3
	18-22	169	7.8
	23-30	610	28.2
	31-45	987	45.6
	46-65	303	14
	Older than 65	22	1
Governorate	Mount Lebanon	903	41.7
	North	335	15.5
	Beirut	265	12.3
	South	241	11.1
	Nabatieh	182	8.4
	Beqaa	143	6.6
	Baalbek-Hermel	73	3.4
	I live outside of Lebanon	18	0.8
Educational level	Akkar	3	0.1
	Completed a university bachelor degree or higher	1,431	66.2
	Completed high school	431	19.9
	Completed middle school	238	11
Nationality	Completed elementary school or less	63	2.9
	Lebanese national	1,978	91.4
Income (Lebanese Pounds)	Foreign national	185	8.6
	Zero	579	26.8
Income (Lebanese Pounds)	Less than 750,000	219	10.1
	750,000 – 1,500,000	505	23.3
	1,500,001 - 3,000,000	461	21.3
	3,000,001 - 6,000,000	216	10
Income (Lebanese Pounds)	More than 6,000,000	183	8.5

Table 3. Descriptive statistics.

Construct	Items	Min	Max	Mean	Standard Deviation
COVID-19 information seeking	6	1	4	3.19	0.722
Passive exposure	1	1	3	2.38	0.687
GSM participation	1	0	3	0.49	0.748
Perceived severity	1	1	4	3.33	0.774
Perceived susceptibility	1	1	4	3.04	0.802
Perceived benefits	1	1	4	3.61	0.687
Perceived barriers	8	1	4	3.25	0.572

Table 4.Correlation matrix.

Construct	COVID-19 information seeking	Passive exposure	GSM participation	Perceived severity	Perceived susceptibility	Perceived benefits	Perceived barriers
COVID-19 information seeking	1.000						
Passive exposure	0.212*	1.000					
GSM participation	0.087*	0.119*	1.000				
Perceived severity	0.285*	0.106*	0.068*	1.000			
Perceived susceptibility	0.135*	-0.045*	-0.010	0.184*	1.000		
Perceived benefits	0.250*	0.077*	0.050*	0.355*	0.110*	1.000	
Perceived barriers	0.046*	0.109*	0.017	0.122*	-0.094*	0.140*	1.000

*. Correlation is significant at the 0.05 level.

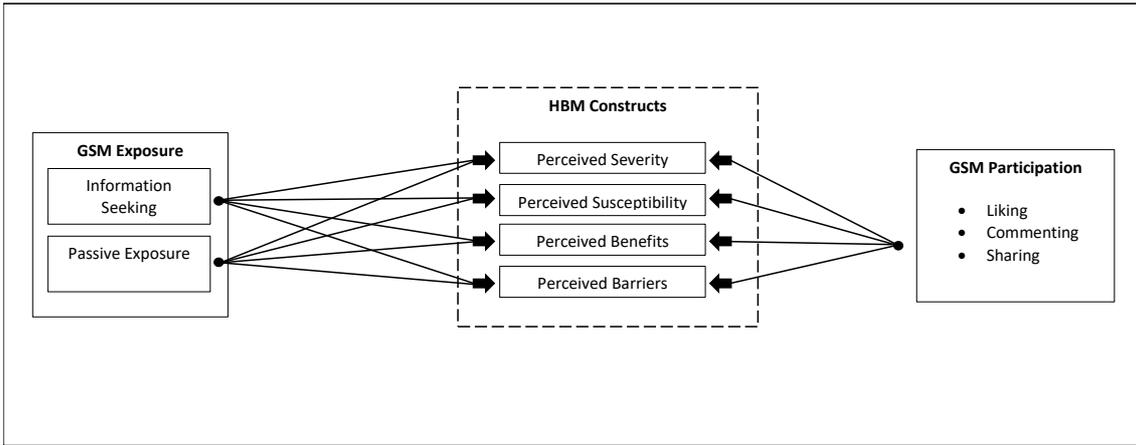


Figure 1. Integrated Framework.